City/County Association of Governments of San Mateo County

FINAL CONGESTION MANAGEMENT PROGRAM FOR 2003

The preparation of this report has been financed through a grant from the U.S. Department of Transportation and the Federal Highway Administration under the Transportation Equity Act for the 21st Century. Content of this report does not necessarily reflect the official views or policy of the U.S. Department of Transportation.

Contents

Tables

Figures

CHAPTER 1
Introduction

In the summer of 1989, the California Legislature approved and Governor Deukmejian signed legislation enacting a comprehensive reform of the Gann spending limit and an $18.5 billion Transportation Financing Program. That financing program and accompanying transportation planning and development measures were presented to the voters as Propositions 111 and 108. Both propositions were approved by California's voters in June of 1990.

The funding package associated with Propositions 111 and 108 included a requirement that every urban county within California designate a Congestion Management Agency (CMA) that would prepare, implement, and biennially update a Congestion Management Program (CMP). In San Mateo County, the City/County Association of Governments (C/CAG) was designated as the CMA. Subsequent legislation (AB 2419) allowed existing Congestion Management Agencies to discontinue participation in the Program. San Mateo County C/CAG voted to continue to participate in and adopt a CMP.

In 1997, SB 45 was passed, significantly revising State transportation funding policies. These changes included reducing the duration of the State Transportation Improvement Program (from 7 years to 4 years), giving Regional Transportation Planning Agencies more responsibility for project selection through the Regional Transportation Improvement Program, and creating the Interregional Improvement Program.

Congressional Reauthorization of ISTEA in 1998, known as the Transportation Equity Act for the 21st Century (TEA-21), preserved funding flexibility, increased funding levels, and established several new planning considerations (access to jobs, consistency with the Intelligent Transportation System national architecture, etc.).

According to the state legislation (AB 471, AB 1791, AB 1963, AB 2419 and SB 45) that calls for Congestion Management Programs to be prepared, the purpose of CMPs is to develop a procedure to alleviate or control anticipated increases in roadway congestion and to ensure that federal, state, and local agencies join with transit districts, business, private

and environmental interests to develop and implement comprehensive strategies needed to develop appropriate responses to transportation needs."[1] The first CMP for San Mateo County was adopted by C/CAG in 1991. It was updated and amended in 1993, 1995, 1997, 1999, and 2001. This is the seventh CMP for San Mateo County. It describes the decisions adopted by C/CAG in 2000 and 2001 to comply with the applicable sections of AB 471, AB 1791, AB 1963 and to include new provisions required by SB 45 and TEA-21.

When the California Legislature defined the requirements for Congestion Management Programs, they set in motion the following actions:

1. A political process that encourages local jurisdictions (cities and the County) to discuss and seek resolution of anticipated transportation supply problems.

2. A political process that requires that all types of measures, including the possibility of implementing land use changes, creating travel demand management actions, and providing transit, ridesharing, and other modal alternatives to driving, be considered in conjunction with building or widening roadways as effective ways to address future urban transportation needs.

3. A technical process to provide consistent and timely information to elected officials about the possible consequences of planned or proposed land developments, and of the costs and benefits of optional ways to resolve anticipated congestion problems.

This CMP describes the framework for the ongoing process that will be followed by the County of San Mateo and the cities in San Mateo County to implement the requirements of AB 471, AB 1791, AB 1963, SB 45, and TEA-21. The decisions made by the City/County Association of Governments are intended to clearly describe the intent of C/CAG to make this process work by adopting CMP elements that emphasize communication and cooperation and provide a flexible approach to resolving issues. The overall goal of this CMP is to help C/CAG promote countywide solutions to transportation problems based upon cooperation and mutual support.

Elements of the CMP

Each Congestion Management Agency is charged with developing, adopting and updating a Congestion Management Program.[2] The following elements must be included in a congestion management program:

[1]California Government Code Section 65088(e).

[2]California Government Code Section 65089(a). By State statute, CMPs need not be changed every year, but must be formally amended and readopted every two years.

- Roadway System

  The Congestion Management Agency must specify a system of highways and roadways for which traffic level of service standards shall be established. The CMP's Roadway System shall include at a minimum all state highways and principal arterials. No highway or roadway designated as a part of the CMP Roadway System shall be removed from the system, (in future CMPs).[3]

- Traffic Level of Service (LOS) Standards

  Level of Service Standards intended to measure roadway congestion must be established for all state highways and principal arterials included in the CMP's Roadway System.[4] Level of service is a qualitative description of roadway operations ranging from LOS A, or free flow conditions, to LOS F, or completely jammed conditions. The Congestion Management Program may not establish any standard below Level of Service E unless the level of service was F at the time that the standard was established.

- Performance Element

  The Performance Element was added by AB 1963. This element includes performance measures to evaluate current and future multimodal system performance for the movement of people and goods in San Mateo County.[5]

- Trip Reduction and Travel Demand Element

  The Congestion Management Program must contain an element promoting the use of alternative transportation modes and ways to reduce future travel demand. Improving a county's jobs/housing balance and implementing travel demand management strategies are specifically mentioned as ways of attaining the objectives of this element of the CMP.[6]

---

[3]California Government Code Section 65089(b)(1)(A).

[4]Ibid.

[5]California Government Code Section 60589(b)(2).

[6]California Government Code Section 65089(b)(3).

- Land Use Impact Analysis Program

  The purpose of this element of the CMP is to create and implement a program to analyze the impacts of land use decisions made by local jurisdictions on regional transportation systems.[7] Estimates of the costs associated with mitigating the projected impacts must be included in the CMP, with some exceptions.[8]

- Seven-Year Capital Improvement Program (CIP)

  The CMP must contain a seven-year program of projects expected to maintain or improve traffic levels of service and transit performance, and to mitigate the impacts of local land use decisions. Projects contained in the CIP must also conform to transportation-related air quality mitigation measures.[9]

In addition to these elements, a CMP must also include a uniform data base and a computer-based transportation model that will be used to determine the quantitative impacts of proposed or planned land developments on a county's transportation systems. Finally, the Congestion Management Agency (C/CAG in San Mateo County) is charged with monitoring the implementation of *all* elements of the CMP and determining conformance with the CMP's requirements and recommendations.

Organization of this CMP

This report, which describes the 2003 Congestion Management Program for San Mateo County, is divided into the following chapters that correspond to the listing of CMP requirements included in AB 1791 and AB 1963:

1. The roadways and intersections that comprise San Mateo County's CMP Roadway System to be monitored for traffic operating conditions are described in Chapter 2.

2. The Level of Service Standards for the CMP's roadway segments, which were designated in the 1991 CMP (one additional segment was added in the 1999 CMP), and the standards for the intersections, which were designated in the 1993 CMP, are presented in Chapter 3.

[7]California Government Code Section 65089(b)(4).

[8]According to statute, interregional trips will be excluded from this cost estimate. Credit will also be given to local, public, and private contributions for improvement to the roadway system.

[9]California Government Code Section 65089(b)(5).

3. The measures adopted by C/CAG to evaluate San Mateo County's multimodal system performance for the movement of people and goods are described in Chapter 4.

4. The key features of San Mateo County's efforts to encourage commuters to use alternatives to driving alone ¥¥ carpools, vanpools or transit -- are explained in Chapter 5.

5. The process to be used to analyze and mitigate the impacts on San Mateo County's transportation systems of potential or planned land use changes is presented in Chapter 6.

6. The guidelines for deficiency plans, should those need to be prepared in the future, are explained in Chapter 7. Also included in this Chapter is a listing of the deficiencies that were identified during the monitoring of the 2003 CMP.

7. The process for projects to be considered for funding as part of this CMP's Capital Improvement Program is presented in Chapter 8.

8. The features of the San Mateo Countywide Travel Demand Forecasting model are described in Chapter 9.

9. The procedures that C/CAG will use to monitor conformance with the CMP are described in Chapter 10.

10. The results of the 2003 monitoring report are presented in Appendix F.

(This page is intentionally left blank)

CHAPTER 2
CMP Roadway System

Legislative Requirements

California Government Code Section 65089 (b)(1)(A) requires that the Congestion Management Agency specify a system of roadways for which level of service standards will be set and monitored. All state highways and principal arterials are to be included in the Congestion Management Program's (CMP's) Roadway System. However, this statute does not specifically define what constitutes a principal arterial. Once a roadway is included in the CMP's Roadway System, the roadway cannot be removed (in a future CMP).

Discussion

Designating the CMP system of roadways is one of the key decisions affecting the CMP, because this action by C/CAG defines which roadways in San Mateo County will have their traffic level of service monitored. In effect, the C/CAG's adoption of a system (network) of roadways establishes the following framework for the subsequent, but related actions taken by C/CAG:

1. The C/CAG has identified which freeways, streets, highways,[1] and intersections in San Mateo County it has deemed to be important enough to have their existing and future traffic operating conditions monitored. The roadways incorporated into the CMP Roadway System serve the vast majority of trips made by driving from, to or through San Mateo County.

[1]Freeways (e.g., U.S. 101 and I-280) are roadways that are completely grade separated from other highways and that do not permit access directly from abutting land uses. Streets (e.g., El Camino Real), also called arterials in this CMP, allow access directly from abutting land uses and are almost never grade-separated from other roadways, (except freeways). Highways, as used in this CMP, refer to roads located in rural areas (e.g., Highway 1 south of Half Moon Bay).

2. C/CAG has indicated which freeways, streets, highways, and intersections in San Mateo County the C/CAG will be expecting to receive nominations of actions or will help formulate actions intended to maintain or attain traffic flow standards designated for those roadways. Possible actions that could be defined to mitigate potential operational or capacity problems on specific roadways include new roadway construction, transit improvements related to the travel origins and destinations served by that roadway, travel demand management actions, or land use changes.[2]

2003 CMP Roadway System

The CMP Roadway System incorporates the CMP Roadway System adopted in 1991 plus the 16 intersections adopted in 1993 and the one additional roadway segment adopted in 1999. The roadways adopted by C/CAG to be part of the CMP's Roadway System are roadways in San Mateo County that fulfill at least one of the following requirements:

1. They are routes that are part of the California State Highway System. (Some of the State Highways in San Mateo County serve as Principal Arterials.)

2. They extend from the San Mateo County/San Francisco County line to the San Mateo County/Santa Clara County line.

3. They extend from San Francisco Bay to the Pacific Ocean and/or connect two major north/south routes.

4. They connect directly with the roadways included in the CMP networks of adjacent counties.

5. They are Principal Arterials, which in San Mateo County were defined as those roadways that are not freeways containing six or more lanes for a length of at least one mile and carrying average daily traffic (ADT) volumes of at least 30,000 vehicles.

The specific roadways included in the CMP Roadway System and the reasons why these roadways were included are as follows:

1. State Route (SR) 1, SR 35, SR 82, SR 84, SR 92, U.S. 101, SR 109, SR 114, I-280, and I-380 are part of the California State Highway System. These are all the State Highways in San Mateo County.

2. SR 1, SR 35, SR 82, U.S. 101, and I-280 extend from the San Francisco County line in the north to the Santa Clara County line in the south. These are the only roadways in San Mateo County to meet this requirement.

[2]Each of those kinds of actions are discussed in the chapters that follow.

3. SR 84 and SR 92 extend east/west from San Francisco Bay to (SR 1 near) the Pacific Ocean. These roadways in addition to I-380 also connect two (or more) major north/south routes.

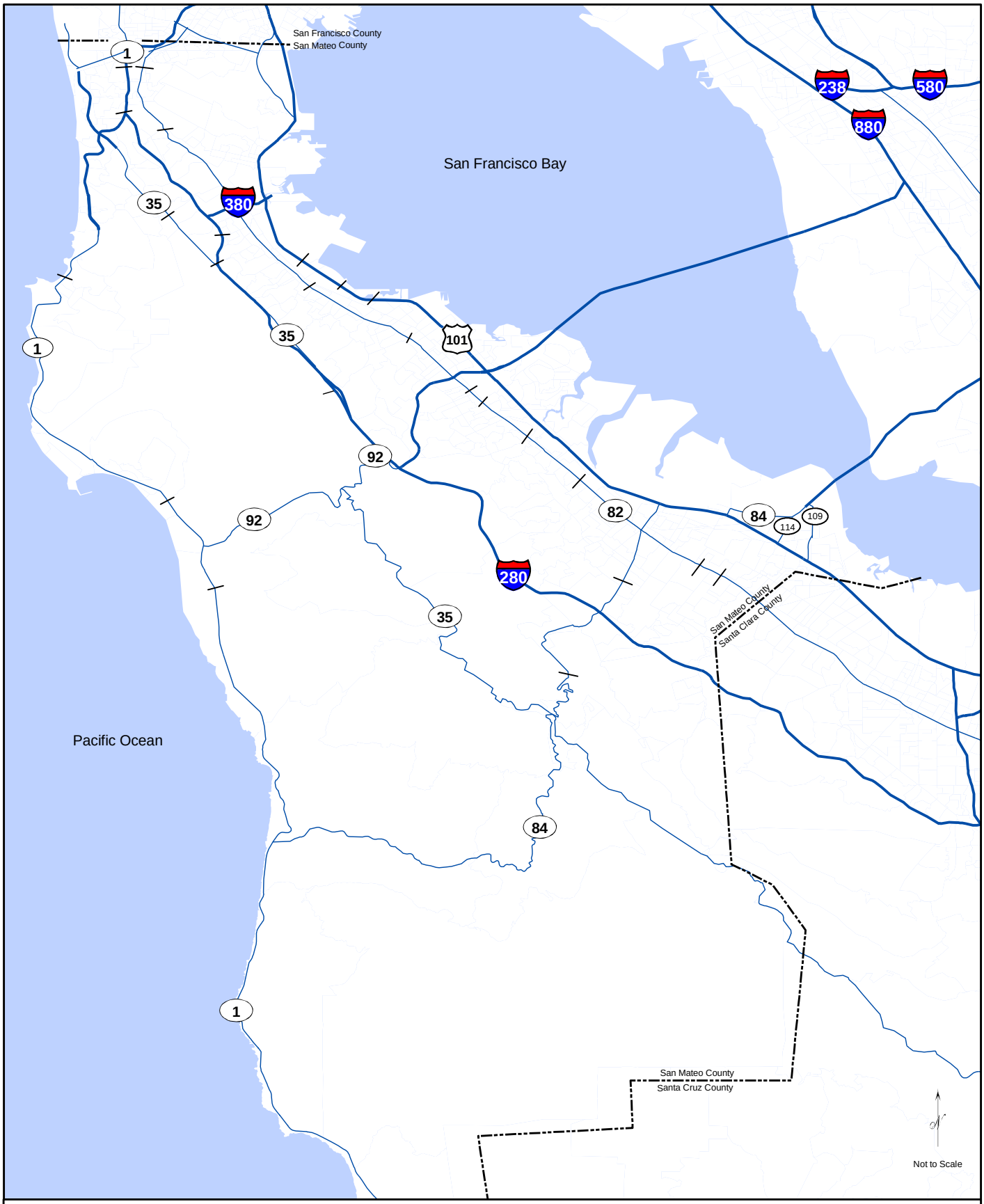
4. Geneva Avenue, Mission Street and Bayshore Boulevard (all in Daly City) are the only roadways that are not State Highways that connect to roadways included in the CMP of an adjacent county. These roadways had to be included in San Mateo County's CMP Roadway System to be consistent with San Francisco County's CMP Roadway System. (No roadways, in addition to the State Highways already mentioned, needed to be added to be consistent with the CMP Roadway Systems of Alameda, Santa Clara, and Santa Cruz Counties).

5. Portions of El Camino Real (SR 82) are the only roadway segments in San Mateo County that qualify for inclusion in the CMP's Roadway System based on this CMP's definition of a Principal Arterial. (All of El Camino Real was included in the CMP's roadway system because this street is part of the California State Highway System¥SR 82).

The following intersections were added to the CMP Roadway System adopted in 1993 so as to have their levels of service monitored.

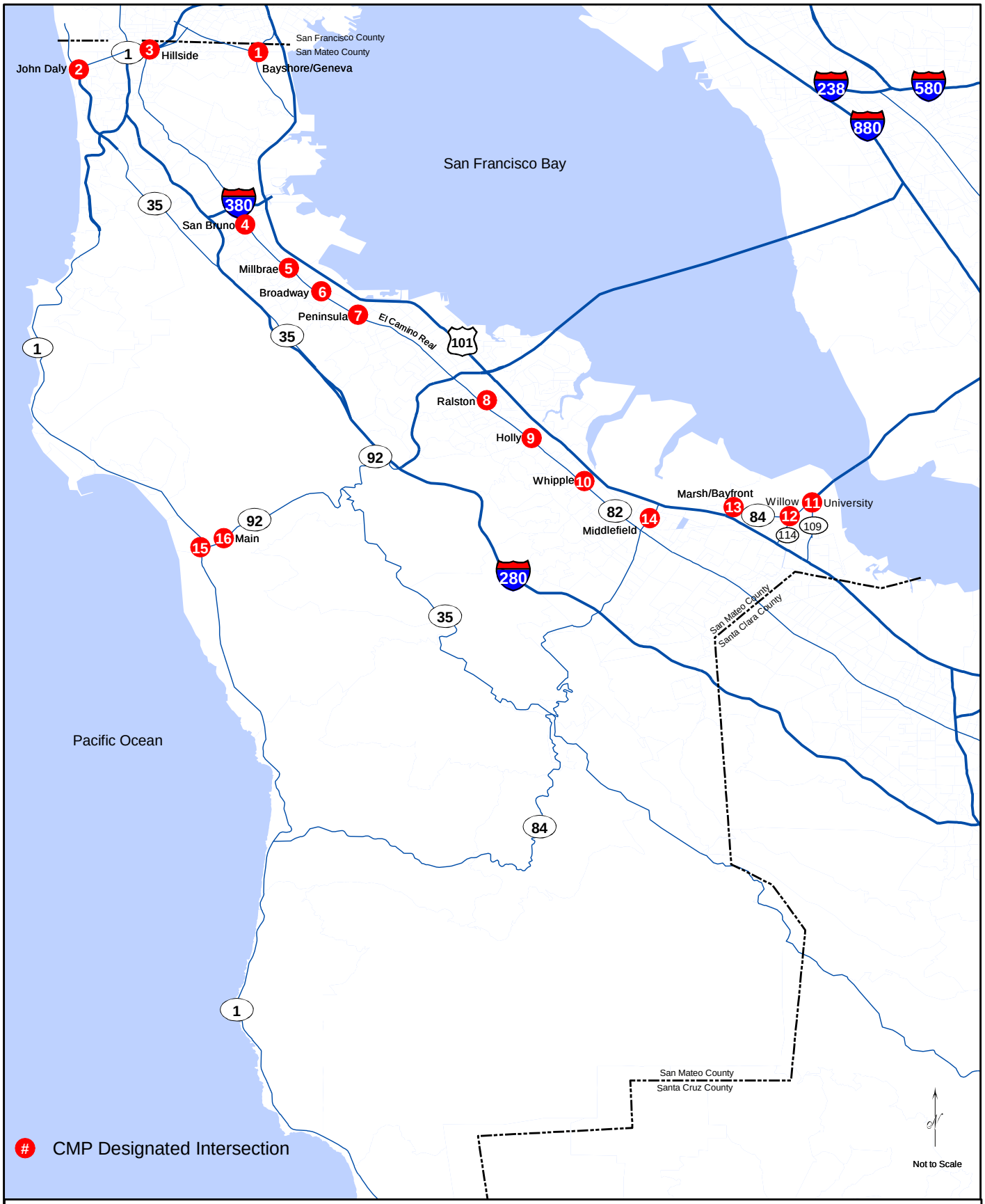
Geneva Avenue and Bayshore Boulevard
SR 35 and John Daly Boulevard
SR 82 (Mission Street) and John Daly Boulevard/Hillside Boulevard
SR 82 (El Camino Real) and San Bruno Avenue
SR 82 and Millbrae Avenue
SR 82 and Broadway
SR 82 and Peninsula Avenue
SR 82 and Ralston Avenue
SR 82 and Holly Street
SR 82 and Whipple Avenue
SR 84 (Bayfront Expressway) and SR 109 (University Avenue)
SR 84 and Willow Road
SR 84 and Marsh Road
SR 84 (Woodside Road) and Middlefield Road
SR 92 and SR 1
SR 92 and Main Street.

The roadways and intersections in San Mateo County whose traffic levels of service will have to be monitored because they are now part of the CMP Roadway System are shown on Figure 2-1 and Figure 2-2, respectively. Detailed descriptions of the roadways included in this CMP's Roadway System are presented in Appendix A. The 1999 CMP included the division of one of the segments on State Route 1 into two separate segments for the purposes of monitoring. This division will occur at Sharp Park Boulevard in Pacifica. The results of the 2003 monitoring report with the current levels of service are contained in Appendix F.



CMP Roadway Segments

Figure 2-1



CMP Intersections

Figure 2-2

(This page is intentionally left blank)

CHAPTER 3
Traffic Level of Service Standards

Legislative Requirements

California Government Code Sections 65089.1 (A) and (B) requires that level of service standards be established by, in this case, C/CAG for the roadways and intersections designated to be in the CMP Roadway System. Furthermore, roadway levels of service (LOS) are to be measured by methods described in one of the following documents: the Transportation Research Board's *Circular 212,* the latest version of the *Highway Capacity Manual,* or an uniform methodology adopted by the CMA that is consistent with the *Highway Capacity Manual.* The CMA (C/CAG in San Mateo) is responsible for selecting the LOS methodology to be used.

The CMP legislation stipulates that the CMP's Level of Service Standards can be set at any level of service—A through F. However, only roadway segments or intersections currently operating at Level of Service F may have an LOS F standard set for them.

Discussion

Level of service (LOS) is a qualitative term used to describe a roadway's operating condition. The level of service of a road or street is designated by a letter grade ranging from A to F, with LOS A representing free-flow conditions with little or no delay and LOS F representing forced flow with excessive delays. Verbal descriptions of the levels of service for the five types of facilities in San Mateo County's CMP Roadway System—freeways, multilane highways, two-lane highways, arterials, and intersections—are presented in Table 3-1. Graphical illustrations of the LOS designations are presented on Figure 3-1.

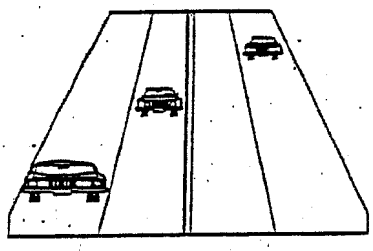
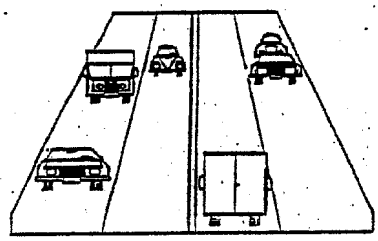
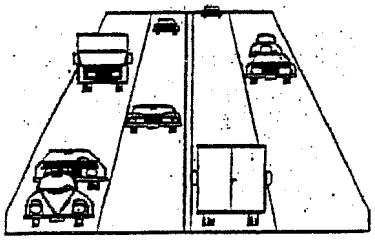
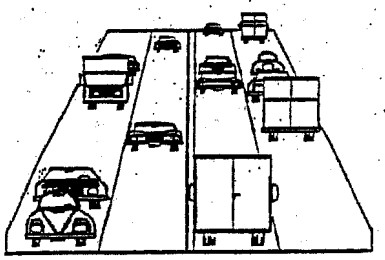
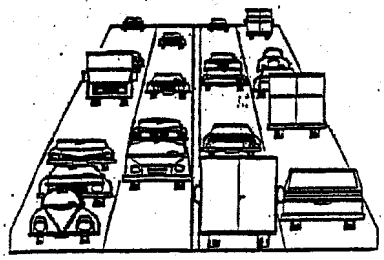
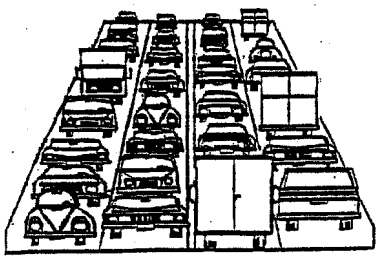
Table 3-1
Level of Service Descriptions

Level of Service	Freeways and Multilane Highways	Two-Lane Highways
A	Highest quality of service with free-flow conditions and a high level of maneuverability.	Free-flow conditions with a high level of maneuverability. Passing is easy to accomplish.
B	Free-flow conditions, but presence of other vehicles is noticeable. Minor disruptions easily absorbed.	Stable operations with passing demand approaching passing capacity.
C	Stable operations, but minor disruptions cause significant local congestion.	Stable operations, but with noticeable increases in passing difficulty.
D	Borders on unstable flow with ability to maneuver severely restricted due to congestion.	Approaching unstable traffic flow. Passing demand is high while passing capacity approaches zero.
E	Unstable operations with conditions at or near capacity. Disruptions cannot be dissipated and cause bottlenecks to form.	Unstable operations. Passing is virtually impossible and platooning becomes intense.
F	Forced or breakdown flow with bottlenecks forming at locations where demand exceeds capacity. Speeds may drop to zero.	Heavily congested flow with traffic demand exceeding capacity. Speeds may drop to zero.

Level of Service	Arterials	Intersections
A	Free-flow conditions with a high level of maneuverability. Minimal stopped delays at signalized intersections.	Free-flow conditions with insignificant delays. No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.
B	Reasonably unimpeded operations with slightly restricted maneuverability. Stopped delays are not bothersome.	Stable operations with minimal delays. An occasional approach phase is fully utilized. Many drivers begin to feel somewhat restricted within platoons of vehicles.
C	Stable operations with somewhat more restrictions in making mid-block lane changes than LOS B. Motorists will experience appreciable tension while driving.	Stable operations with acceptable delays. Major approach phase may become fully utilized. Most drivers feel somewhat restricted.
D	Approaching unstable operations where small increases in volume produce substantial increases in delay and decreases in speed.	Approaching unstable conditions. Delays are tolerable. Drivers may have to wait through more than one red signal indication. Queues may develop but dissipate rapidly, without excessive delay.
E	Unstable operations with significant intersection approach delays and low average speeds.	Unstable operations with significant delays. Volumes at or near capacity. Vehicles may have to wait through several signal cycles. Long queues form upstream from intersection.

Figure 3-1

LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE		FLOW CONDITIONS	DELAY	SERVICE RATING
A		Highest quality of service. Free traffic flow with low volumes. Little or no restriction on maneuverability or speed.	None	Good
B		Stable traffic flow, speed becoming slightly restricted. Low restriction on maneuverability.	None	Good
C		Stable traffic flow, but less freedom to select speed or to change lanes.	Minimal	Adequate
D		Approaching unstable flow. Speeds tolerable but subject to sudden and considerable variation. Less maneuverability and driver comfort.	Minimal	Adequate
E		Unstable traffic flow and rapidly fluctuating speeds and flow rates. Low maneuverability and low driver comfort.	Significant	Poor
F		Forced traffic flow. Speed and flow may drop to zero.	Considerable	Poor

The purpose of setting LOS standards is to evaluate changes in congestion. Congestion is to be measured on the designated system of CMP roadways via level of service calculations. Existing levels of service are to be calculated every two years as part of the CMP's traffic operations monitoring program. (The results of the monitoring of existing levels of service in 2003 for the CMP roadway segments and intersections are presented in Appendix F.) Future (or anticipated) levels of service are expected to be calculated as part of the program to evaluate the impacts of planned (or anticipated) land use changes.[1]

The methods used in this CMP to analyze existing and future levels of service on the CMP Roadway System were selected after reviewing the methods used by local jurisdictions and Caltrans. A survey conducted in 1991 revealed that most of the cities that responded used standard level of service methods for signalized intersections with half using the 1985 *Highway Capacity Manual* method and half using the Transportation Research Board's *Circular 212* method. About a third of the responding cities used a reserve capacity method to evaluate unsignalized intersections. The volume-to-capacity method was used to evaluate arterials in half of the responding cities. Most cities indicated that they did not use a standard level of service calculation method for the remaining facilities—freeways, multilane highways. and two-lane highways. Of those cities that had previously selected a method, the volume-to-capacity ratio method was preferred. Caltrans uses a floating car method to determine travel speeds as a measure of congestion on freeways.

The methods selected to calculate the levels of service are described in Appendix B. These methods are consistent with the Transportation Research Board's *Circular 212* and the latest version of the *Highway Capacity Manual,* as required by the CMP legislation.

When monitoring conformance with this CMP's recommendations, a significant increase in congestion is defined as a change in the measured level of service to any level worse than the specified LOS standard. Therefore, nonattainment of the CMP's Roadway LOS Standards would occur whenever the LOS for a roadway segment or intersection included in the CMP Roadway System is monitored as falling below the LOS standard established for that roadway facility. With one exception, this would occur regardless of the LOS standard set by C/CAG for a roadway. The exception would be that for a roadway where the standard was set to be LOS F, further decreases in their LOS would not be measured as falling below this CMP's standards.

Projected violations of the LOS standards may be identified as a result of the Land Use Impact Analysis Program. These projected violations will not trigger preparation of deficiency plans.

Possible Options

In general, there are two basic options that can be selected to develop level of service standards. When presented to C/CAG in 1991, these options were defined as follows:

[1]See Chapter 6 for further discussion of the program that will analyze the potential countywide impacts of land use changes on San Mateo County's transportation system.

Option 1: C/CAG could select LOS E as the standard for all roadways, with the exception of LOS F for roadways currently operating at LOS F.

Option 2: C/CAG could select LOS standards that vary by specific roadway segment.

Option 1 would provide the greatest flexibility to modify the LOS standards when future CMPs are prepared and the lowest risk of having to change standards later based on more refined analyses. However, this approach does not differentiate among acceptable levels of congestion on various types of roadways, such as freeways versus arterials and urban settings versus rural settings. Option 2 does allow for different standards to be selected for various types of roadway segments, but does so at the risk that some standards may be set too high in relation to information about traffic volumes developed in subsequent CMPs. Nevertheless, the second option would establish a direction for San Mateo County's CMPs more in keeping with the intent of AB 471.

Process of Selecting LOS Standards for Roadway Segments

The LOS standards for roadway segments were selected during development of the 1991 CMP. Analyses of existing (1990/91) levels of service and projections of future (year 2000) levels of service were used to develop the LOS standards for San Mateo County's CMP Roadway System. The process used to develop the standards followed these steps:

1. Limits of roadway segments were selected based on facility type and number of lanes.

2. Existing (1990/91) peak-hour volumes were identified. Traffic volumes for the morning commute period (6:00 AM to 10:00 AM) and the evening commute period (3:00 PM to 7:00 PM), obtained from Caltrans, the cities, and new traffic counts, were reviewed. (The process of compiling and analyzing feasible traffic counts is described in Appendix C of the 1991 CMP.)

3. Existing (1990/91) volume-to-capacity (V/C) ratios and levels of service were evaluated.

4. After the highest hourly volumes were identified, their corresponding V/C ratios and LOS were selected to represent existing (1990/91) conditions for each roadway segment.

5. Future volumes (for the year 2000) were projected by applying growth factors obtained by comparing the Metropolitan Transportation Commission's (MTC's) (simulated) traffic assignments for the years 1987 and 2000. (The traffic volumes simulated by MTC to represent traffic conditions presumed to exist in 1987 were very similar to actual counts recorded in 1990 and 1991.)

6. Locations projected to have changes in capacity, due to roadway widening projects, were identified. Future V/C ratios (projected for the year 2000) and corresponding LOSs were evaluated for the AM and PM peak hours selected earlier.

Roadway Segment Level of Service Standards

The following LOS standards were selected for the roadway segments.

a. If the existing (1990/91) level of service was F, then the standard was set to be LOS F.

b. If the existing or future level of service was or will be E, then the standard was set to be LOS E.

c. The standard for roadway segments near the San Francisco, Santa Clara, and Alameda County borders, with one exception,[2] was set to be LOS E to be consistent with the recommendations in those counties' 1991 CMPs. (This standard would apply unless those roadway segments were already operating at LOS F.)

d. On SR 82 (El Camino Real), the standard was set to be LOS E.

e. For the remaining roadway segments, the standard was set to be one letter designation worse than the LOS projected for the year 2000.

The LOS standards adopted by C/CAG for the roadway segments included in this CMP are presented in Table 3-2 and on Figure 3-2.

The roadway segment Level of Service Standards adopted by the C/CAG to monitor attainment of the CMP support the following objective:

> *The LOS Standards established for San Mateo County vary by roadway segment. By adopting LOS standards based on geographic differences, the C/CAG signaled that it intends to use the CMP process to prevent future congestion levels in San Mateo County from getting worse than currently anticipated. At the same time, the variations in LOS standards by geographic area conform to current land use plans and development differences between the Coastside and Bayside, between older downtowns near CalTrain stations and other areas of San Mateo County.*

[2]For I-280 south of SR 84, the adopted standard is LOS D.

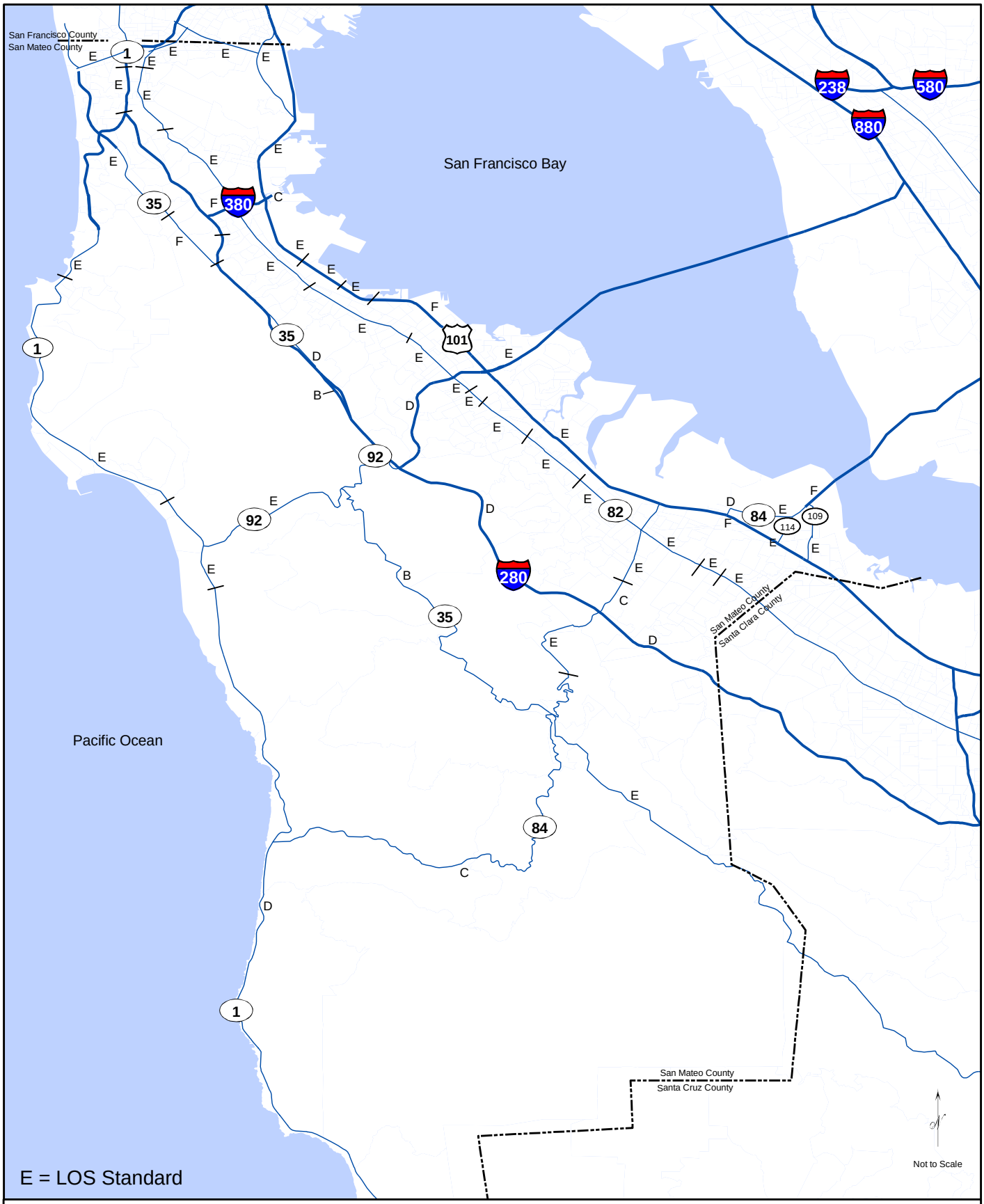
Table 3-2
Level of Service Standards for CMP Roadway Segments[a]

Route	Roadway Segment	Baseline (1990-91) LOS	LOS Standard
1	San Francisco County Line to	D	E
1	to Linda Mar Boulevard		E
1	Linda Mar Boulevard to Frenchmans Creek Road	D	E
1	Frenchmans Creek Road to Miramontes Road	E	E
1	Miramontes Road to Santa Cruz County Line	C	D
35	San Francisco County Line to Sneath Lane	C	E
35	Sneath Lane to I-280	E	F[b]
35	I-280 to SR 92	A	B
35	SR 92 to SR 84	A	B
35	SR 84 to Santa Clara County Line	A	E
82	San Francisco County Line to John Daly Boulevard	A	E
82	John Daly Boulevard to Hickey Boulevard	A	E
82	Hickey Boulevard to I-380	A	E
82	I-380 to Trousdale Drive	A	E
82	Trousdale Drive to 3rd Avenue	B	E
82	3rd Avenue to SR 92	B	E
82	SR 92 to Hillsdale Avenue	A	E
82	Hillsdale Avenue to 42nd Avenue	A	E
82	42nd Avenue to Holly Street	B	E
82	Holly Street to Whipple Avenue	A	E
82	Whipple Avenue to SR 84	D	E
82	SR 84 to Glenwood Avenue	B	E
82	Glenwood Avenue to Santa Cruz Avenue	D	E
82	Santa Cruz Avenue to Santa Clara County Line	D	E
84	SR 1 to Portola Road	B	C
84	Portola Road to I-280	D	E
84	I-280 to Alameda de las Pulgas	B	C
84	Alameda de las Pulgas to U.S. 101	C	E
84	U.S. 101 to Willow Road	D	D
84	Willow Road to University Avenue	E	E
84	University Avenue to Alameda County Line	F	F
92	SR 1 to I-280	E	E
92	I-280 to U.S. 101	C	D
92	U.S. 101 to Alameda County Line (Bridge Causeway)	D	E
101	San Francisco County Line to I-380	E	E
101	I-380 to Millbrae Avenue	D	E

Route	Roadway Segment	Baseline (1990-91) LOS	LOS Standard
101	Millbrae Avenue to Broadway	D	E
101	Broadway to Peninsula Avenue	E	E
101	Peninsula Avenue to SR 92	F	F
101	SR 92 to Whipple Avenue	D	E
101	Whipple Avenue to Santa Clara County Line	F	F
109	Kavanaugh Drive to SR 84 (Bayfront Expressway)	E	E
114	U.S. 101 to SR 84 (Bayfront Expressway)	D	E
280	San Francisco County Line to SR 1 (north)	N/A	E
280	SR 1 (north) to SR 1 (south)	D	E
280	SR 1 (south) to San Bruno Avenue	C	D
280	San Bruno Avenue to SR 92	C	D
280	SR 92 to SR 84	C	D
280	SR 84 to Santa Clara County Line	C	D
380	I-280 to U.S. 101	F	F
380	U.S. 101 to Airport Access Road	A	C
Mission Street	San Francisco County Line to SR 82	A	E
Geneva Avenue	San Francisco County Line to Bayshore Boulevard	A	E
Bayshore Boulevard	San Francisco County Line to Geneva Avenue	A	E

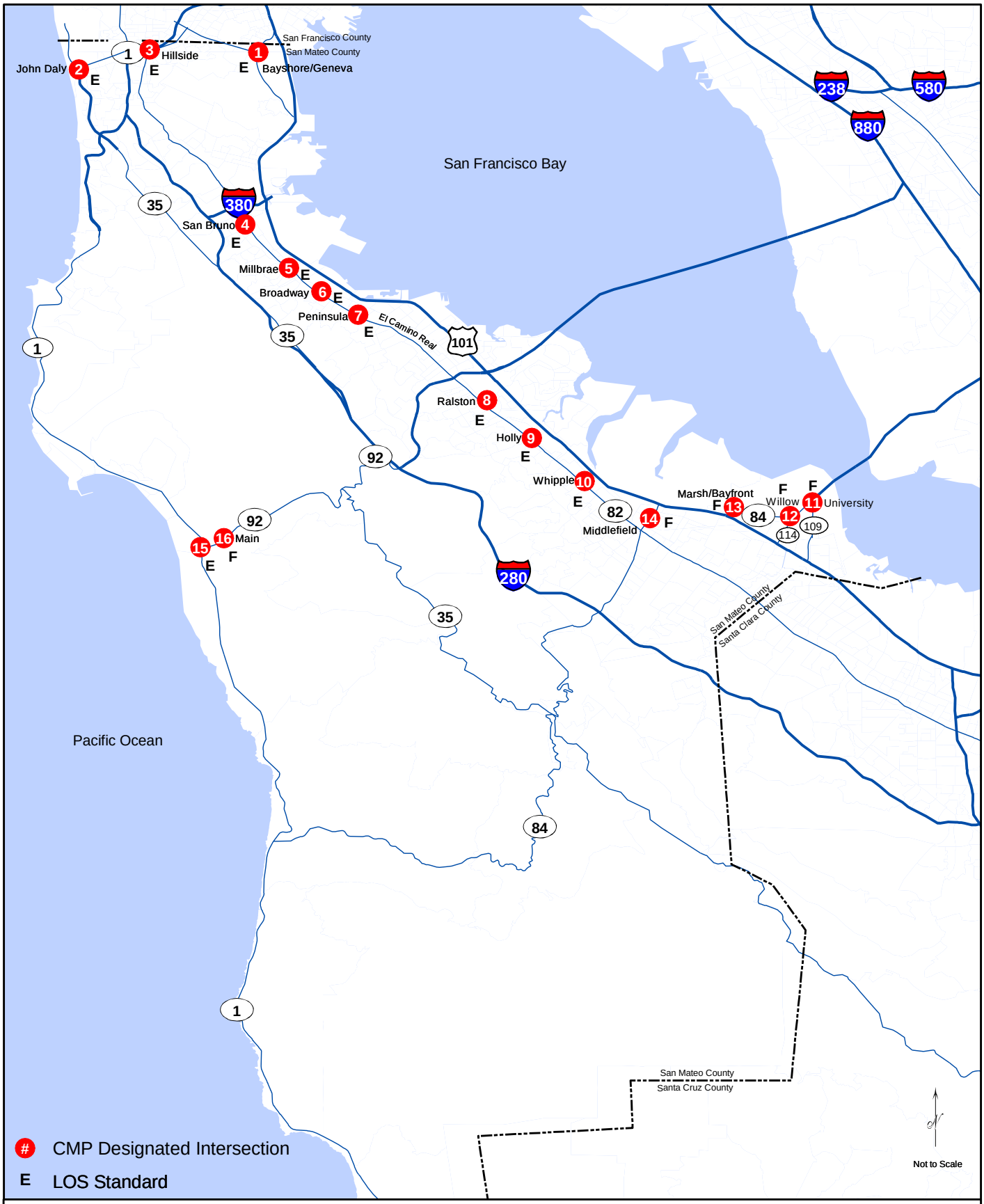
[a] Levels of Service calculated based on volume-to-capacity ratios.

[b] The LOS Standard has been changed from LOS E to LOS F based on the evaluation of additional traffic count data.



CMP Roadway Segments and LOS Standards

Figure 3-2



CMP Intersections and LOS Standards

Figure 3-3

2. The standards established the direction for subsequent CMPs. With the adoption of those standards, the C/CAG started the technical and political processes of respecting small area or city-based differentiations, while requiring that information on operating conditions be collected throughout San Mateo County to monitor changes in levels of service on roadways considered to be of importance to more than one jurisdiction.

3. The standards created the initial linkage between planned or anticipated land use changes and the analysis of the impacts that those changes would be projected to have on San Mateo County's roadway system. (Additional discussion of the Land Use Impact Analysis Program is presented in Chapter 6.)

Intersection Level of Service Standards

Sixteen intersections were added to the CMP Roadway System first adopted in 1991. A process similar to the process used to develop the standards for the roadway segments was used to develop the standards for the intersections.

As with the CMP's roadway segments, intersection levels of service were calculated by using volume-to-capacity ratios. The Transportation Research Board's *Circular 212* Planning method was used, and capacity adjustments were made to reflect traffic operations in San Mateo County. The method used to calculate intersection levels of service is described in detail in Appendix B.

The following process was used to develop the level of service standards for intersections:

1. Existing (1993) peak-hour intersection turning-movement volumes were obtained from manual counts conducted during the morning commute period (7:00 AM to 9:00 AM) and the evening commute period (4:00 PM to 6:00 PM).

2. Existing volume-to-capacity ratios were calculated and levels of service were evaluated for the AM and PM peak hours.

3. Future intersection volumes were projected by applying growth factors obtained by comparing MTC's traffic assignments for roadway segments adjacent to each intersection for the years 1987 and 2000.

4. Future (year 2000) V/Cs were calculated and LOSs were evaluated for the AM and PM peak hours.

5. Intersection Level of Service Standards were selected based on the following considerations:

    a. If the existing level of service is F, then the standard is set to be LOS F.

b. If the existing or future level of service is or will be E, then the standard is also set to be E.
c. The standard for the intersections near the San Francisco, Santa Clara, and Alameda Counties will be LOS E to be consistent with the LOS standards adopted in those counties.

d. On SR 82 (El Camino Real), the standard is set to be LOS E to be consistent with the roadway segment standards.

e. For the remaining intersections, the standard is set to be LOS E to correspond to the standard established for the adjacent roadway segment. (All of the segments on which these intersections are located have standards set to LOS E.)

The LOS standards adopted by C/CAG for the 16 designated intersections are presented in Table 3-3 and Figure 3-3.

Table 3-3
Intersection Level of Service Standards

Intersection	Peak Hour	Baseline (1993) LOS	LOS Standard
Geneva Avenue/Bayshore Boulevard	AM	A	E
	PM	A	
Skyline Boulevard (SR 35)/	AM	A	E
John Daly Boulevard	PM	A	
Mission Street (SR 82)/John Daly Boulevard-	AM	A	E
Hillside Boulevard	PM	A	
El Camino Real (SR 82)/San Bruno Avenue	AM	A	E
	PM	C	
El Camino Real (SR 82)/Millbrae Avenue	AM	C	E
	PM	B	
El Camino Real (SR 82)/Broadway	AM	A	E
	PM	A	
El Camino Real (SR 82)/	AM	A	E
Park-Peninsula Avenue	PM	A	
El Camino Real (SR 82)/Ralston Avenue	AM	A	E
	PM	C	
El Camino Real (SR 82)/Holly Street	AM	A	E
	PM	B	

Intersection	Peak Hour	Baseline (1993) LOS	LOS Standard
El Camino Real (SR 82)/Whipple Avenue	AM	A	E
	PM	B	
Bayfront Expressway (SR 84)/ University Avenue (SR 109)	AM	D	F
	PM	F	
Bayfront Expressway (SR 84)/ Willow Road (SR 114)	AM	F	F
	PM	C	
Bayfront Expressway (SR 84)/Marsh Road	AM	E	F
	PM	F	
Woodside Road (SR 84)/Middlefield Road	AM	D	E
	PM	E	
SR 92/SR 1	AM	B	E
	PM	A	
SR 92/Main Street	AM	F	F
	PM	D	

Level of Service Standards and Monitoring the CMP

The LOS standards presented in this CMP are all based on analyzing existing traffic counts or projections of local and regional traffic. That is, the calculations of existing and projected weekday levels of service do not exclude some types of trips, such as those associated with interregional travel or low-income housing. For purposes of determining deficiencies, however, as required by law, the impacts of the following will be excluded: (1) interregional travel, (2) construction, rehabilitation, or maintenance of facilities that impact the system, (3) freeway ramp metering, (4) traffic signal coordination by the state for multi-jurisdictional agencies, (5) traffic generated by the provision of low- and very low-income housing, (6) traffic generated by high-density residential development located within one-fourth mile of a rail passenger station, and (7) traffic generated by any mixed-use development located within one-fourth mile of a fixed rail passenger station, if more than half of the land area, or floor area, of the mixed-use development is used for high-density residential housing, as determined by the agency. Levels of service associated with traffic occurring on weekends or at times when special events occur have not been analyzed in this CMP.

Level of Service Issues for Future CMPs

Although the C/CAG has adopted level of service standards for the roadway segments and intersections that are part of the 2003 CMP Roadway System, future resolution of the following issues could affect the definition of LOS standards in future CMPs:

1. The Level of Service Standards presented in Tables 3-2 and 3-3 apply to *continuous roadway segments and specific intersections.* The adopted standards do not require measuring congestion at other specific sites, such as other intersections, freeway ramps or freeway weaving areas. If the measurement and analysis of operating conditions for those types of facilities are to be added to future CMPs, the LOS standards would be set for them at that time.

2. The level of service standards were based on calculated volume-to-capacity ratios. This measure of performance was selected due to the types of available data. The level of service calculation methods may be modified in future CMPs and the resulting levels of service may be slightly different. For example, it is possible that levels of service measured by conducting travel time runs could be different from those levels of service described in this CMP. This is one reason why the LOS standards for this CMP are one to two levels worse than the levels of service projected for the year 2000.

3. Limited amounts of data were available to evaluate existing levels of service. For example, the counts provided by Caltrans were listed in one-hour increments (i.e., 4:00 PM to 5:00 PM, 5:00 PM to 6:00 PM). These one-hour increments do not necessarily reflect when the highest peak-hour volumes occur (e.g., those could have occurred from 4:30 PM to 5:30 PM).

4. The Level of Service Standards may be refined by using the Countywide Travel Demand Forecasting Model. That model is described in Chapter 9. It will allow C/CAG to more accurately forecast the performance of the CMP's Roadway System in future years.

As a result of these changes, C/CAG could identify additional roadway segments and intersections operating at LOS F. The C/CAG would then amend this CMP's LOS Standards to reflect that new information.

This page is intentionally left blank

CHAPTER 4
Performance Element

Legislative Requirements

One of the changes imposed by AB 1963 is to rename the "Transit Level of Service Standards" element to the "Performance" element. According to California Government Code section 65089(b)(2), this element includes performance measures to evaluate current and future multimodal system performance for the movement of people and goods. At a minimum, these performance measures shall incorporate highway and roadway system performance, and measures established for the frequency and routing of public transit, and for the coordination of transit services provided by separate operators. These performance measures shall support mobility, air quality, land use, and economic objectives, and shall be used in the development of the capital improvement program, deficiency plans, and the land use impact analysis program.

Discussion

One of the key phrases in AB 1963 regarding this element is "multimodal system performance". The purpose of this element is to identify measures that, either individually or taken as a group, evaluate how the *countywide transportation system (including all modes)* is performing, and to present the results of the evaluation. The Traffic Level of Service Standards element and the monitoring of that element provides C/CAG with information regarding the performance of the roadway system. This element will provide information regarding the transportation system as a whole.
The performance measures will be used to evaluate the effectiveness of projects proposed for inclusion in the CMP Capital Improvement Program. They will also be used to evaluate the effectiveness of proposed actions in deficiency plans to determine whether they are appropriate and acceptable. In the Land Use Impact Analysis Program, the performance measures can be used to evaluate proposed mitigation measures.

Possible Performance Measures

There is a myriad of performance measures that can be selected for the CMP. The 12 transportation system performance measures, listed in the Statewide CMP/Air Quality Study, are:

1. Level of Service (Volume-to-Capacity)
2. Hours of Delay
3. Travel Time (Vehicle Only)
4. Travel Time (All Motorized Modes)
5. Modal Split
6. Average Vehicle Occupancy
7. Average Vehicle Ridership
8. Vehicles Miles of Travel
9. Vehicles Miles of Travel Per Person Trip
10. Person Throughput (Person Trips Per Hour Per Mile of Facility)
11. Accessibility Percent Employees Within X Minutes
12. Accessibility Percent Employees Within X Miles

These 12 measures were used as the springboard for discussion and selection of the performance measures for San Mateo County.

Selection Criteria

The selection process included a discussion of the performance measure options, an identification of available data, and an identification of information that could be developed using the San Mateo Countywide Travel Demand Forecasting model. The selection criteria included measurability (Can they be measured in the field or be easily ascertained from available data?), forecastability (Can changes in the measure be predicted using the countywide travel demand forecasting model or other tool?), multimodality (Does the measure include a variety of modes?), and clarity (Can the measure be understood by lay people?).

San Mateo County Performance Measures

Four performance measures were selected for the 1997 CMP, retained for the 1999 and 2001 CMP's, and will be retained for the 2003 CMP. In addition, for the 2003 CMP, the Pedestrian and Bicycle Improvement performance measure will be increased to encourage more

improvements in new projects. These measures will be evaluated for peak commute periods, when congestion levels are at their highest. The four measures are:

1. *Level of Service.* This performance measure provides an overview of the operating level of the roadway system in San Mateo County. It is already included in the CMP and Level of Service Standards have been set for selected roadway segments and intersections. Roadway level of service will be measured with either vehicle counts, to determine volume-to-capacity ratios, or floating car runs, to determine travel speeds. In addition, the duration of the peak period will be reviewed.

2. *Travel Times for Single-Occupant Automobiles, Carpools, and Transit.* This performance measure will determine the amount of time required to traverse selected corridors on a variety of modes. The corridors will be selected so that comparable distances can be measured. (One example would be the U.S. 101/CalTrain corridor from the northern county border to the southern county border. Travel times would be measured for travelers on CalTrain, in single-occupant automobiles on U.S. 101, and in a SamTrans bus on El Camino Real.) Field measurements would be used to determine the travel times for single-occupant automobiles. Transit schedules would be used to determine travel times via bus and CalTrain. Transit travel times could also be field checked. The travel times could be compared among the modes and as they vary over time. Travel times for peak periods would be compared to travel times for off-peak periods to determine the amount of peak-period delay on each mode.

3. *Pedestrian and Bicycle Improvements.* The purpose of this measure is to ensure that pedestrian and bicycle travel is being incorporated in new transportation improvement projects. This measure will be accomplished by considering pedestrian and bicycle facilities in the design for all transportation projects in the CMP's Capital Improvement Program. If a new transportation improvement project does not incorporate pedestrian and bicycle travel, it must explain provide justification for such.

4. *Ridership/Person Throughput for Transit.* This measure will evaluate the numbers of individuals that use transit during peak periods. It will be measured by accumulating available ridership data from transit agencies that provide service in San Mateo County. It will be used to determine whether transit ridership is growing, how the ridership compares to the capacity, and how the various transit modes (bus, CalTrain, BART) compare among themselves.

Monitoring will be done biennially. The results will be used for planning purposes and to identify where additional measures may be needed in order to better assess the degree to which congestion is improving or worsening.

(This page is intentionally blank)

CHAPTER 5
Trip Reduction and Travel Demand Element

Legislative Requirements

California Government Code 65089.a.3 requires that a Trip Reduction and Travel Demand Element be part of the CMP. As stated in that legislation, and amended by AB 1963, this element should promote alternative transportation methods (carpools, vanpools, transit, bicycles, park-and-ride lots, etc.), improve the balance between jobs and housing, and promote other strategies to reduce traffic congestion such as flexible work hours, telecommuting, and parking management programs. Also stated is that the agency shall consider parking cash-out programs.

The agency and air quality management district are to coordinate the development of trip reduction responsibilities and shall avoid duplication. A multiple site employer shall have the option of complying with a district employer trip reduction rule, or a similar rule proposed pursuant to a federal implementation plan, and reporting directly to the district or a federal or state agency. A multiple site employer that exercises this option shall be exempt from an employer-based trip reduction requirement imposed pursuant to the trip reduction and travel demand element. As per Health and Welfare Code 40929, the Congestion Management Agency shall not require an employer to implement an employee trip reduction program unless the program is expressly required by federal law and the elimination of the program will result in the imposition of federal sanctions, including, but not limited to, the loss of federal funds for transportation purposes. This does not however, prohibit local jurisdictions from requiring trip reduction and other transportation demand management programs as a condition for the approval of development permits.

Measure A, adopted by the San Mateo County voters on June 7, 1988, authorized the imposition of a one-half cent increase in the sales tax to support transportation improvements contained in the Transportation Expenditure Plan adopted by the Board of Supervisors and a majority of the cities representing a majority of the population. This Plan requires that the Transportation Authority adopt in conjunction with the County and the Cities, a Transportation

Systems/Demand Management (TSM/TDM) Plan, and that no Measure A project (excluding Paratransit, Local Entities, TSM, Bicycle Program, and Administration) shall be allocated funds unless the project is found to be in conformity with the TSM/TDM Plan. Each jurisdiction in San Mateo County must have a TSM/TDM plan/program in order to be eligible to receive Measure A funds.

Discussion

The purpose of this CMP element is to describe San Mateo County's ongoing efforts to reduce congestion and attain the Traffic Level of Service Standards, presented in Chapter 3, through a variety of actions. One of the ways to reduce congestion would be to increase the people-carrying capacity of the CMP Roadway System by promoting the use of travel modes other than the single-occupant automobile, such as carpools, vanpools, transit, and bicycles.

The implementation of congestion reduction strategies such as staggered work hours, telecommuting, and parking management are also expected to be pursued at the local level.

Data for mode of transportation to work by San Mateo County employed residents from the census are presented in Table 5-1

Table 5-1
San Mateo County Employed Residents (Mode of Transportation to Work)

	1990		2000		Change
Drive Alone	251,218	(.72)	256,066	(.72)	4,848
Carpool	45,104	(.13)	45,637	(.13)	533
Public Transportation	25,788	(.07)	26,029	(.07)	241
Motorcycle	1,333	(.01)	878	(.00)	-455
Bicycle	2,606	(.01)	2,896	(.01)	290
Walked	8,868	(.03)	7,609	(.02)	-1,249
Other Means	6,059	(.02)	2,406	(.01)	-3,652
Work at Home	9,532	(.03)	12,845	(.04)	3,313
TOTALL:	346,559		354,096		7,537

Source: 1990 and 2000 Census.

Most county employed residents are driving alone to work, a trend that has grown stronger since 1980. In 1990 and 2000, solo automobile drivers accounted for 72 percent of the county

employed residents' commute trips. By comparison, only 7 percent traveled to work by transit and 13 percent by carpool.

Another of the actions recommended in AB 471 to reduce roadway congestion is to try to improve an area's (in this case, San Mateo County's) balance between available jobs and housing opportunities. The intent of this legislative requirement is to reduce the number of long-distance commute trips that have to be made when individual jurisdictions or groups of jurisdictions offer more employment opportunities than affordably priced housing to accommodate the work force.

According to the Association of Bay Area Governments (ABAG), the gap between the number of jobs in San Mateo County and the number of residents in the local labor force is projected to narrow in the next five years. As shown in Table 5-2, this change will occur because the number of jobs projected to be located in San Mateo County is projected to grow faster than the number of county residents seeking employment. The present growth rate predicted in employment is nearly twice as large as that projected for the local work force (23 percent versus 14 percent). This difference is due primarily to local policies that encourage the development of major employment centers and historically have not encouraged affordable housing.

Table 5-2
San Mateo County's Employment and Employed Residents

	1990	1995	2000	2005	2010	Percent Change 1990-2010
Employment[a]	319,120	330,190	367,180	384,720	393,540	23.3
Employed Residents[b]	353,630	356,200	372,400	387,200	401,700	13.6
Ratio of Employment to Employed Residents	0.90	0.93	0.99	0.99	0.98	8.9

[a] Number of jobs located in San Mateo County.
[b] Number of San Mateo County residents who are employed.

Source: ABAG *Projections '94,* page 229, December 1993.

The projections presented in Table 5-2 appear to indicate that San Mateo County maintains a comparative balance between employment opportunities and the local labor pool. However, this is not the case. Not all of San Mateo County's employed residents work in San Mateo County and not all of the jobs in San Mateo County are filled by San Mateo County residents. As shown in Table 5-3, 60 percent of the jobs in San Mateo County are filled by San Mateo County residents. The remaining jobs are filled by employees who reside in the neighboring counties in relatively equal parts. Similarly, approximately 60 percent of the employed residents work within

San Mateo County. Other residents work in San Francisco County, Santa Clara County, and Alameda County in descending order. Also, as shown in Table 5-3, these trends are not expected to change significantly over the next 20 years.

Table 5-3
Origins and Destinations of Home-to-Work Trips

	Percent of San Mateo County Jobs Filled by Employees Residing in Each County		Percent of San Mateo County Employed Residents Who Commute to Each County	
County	1990	2010	1990	2010
San Mateo	63.0	60.0	58.2	57.4
San Francisco	10.2	11.2	22.8	24.3
Santa Clara	10.0	12.6	12.4	11.7
Alameda	8.3	9.1	3.8	3.5
Rest of Region	8.5	7.1	2.8	3.1

Source: Commute Patterns, San Mateo County Planning Department-These figures are estimates based on 1990 Census journey-to-work data, adjusted using work trip increases forecast by MTC, 1994.

Current TSM/TDM Programs in San Mateo County

Measures that reduce the number of vehicles on the roadway system are referred to as Transportation Demand Management (TDM) measures. Measures that improve the efficiency of the system are referred to as Transportation System Management (TSM) measures. TSM measures include traffic signal synchronization, ramp metering, and high occupancy vehicle (HOV) lanes (also known as diamond or carpool lanes). Both TDM and TSM are addressed in this element.

Measure A mandated that every jurisdiction in San Mateo County have a TSM/TDM plan/program in order to be eligible to receive Measure A funds. The Measure A TSM Plan is the mandated TSM/TDM program for San Mateo County and the primary funding source for this effort. It requires that local jurisdictions implement TSM/TDM programs in order to be eligible to receive Measure A funding.

Measure A TSM Plan

In June 1988, voters in San Mateo County approved Measure A which created the San Mateo County Transportation Authority and authorized a half cent increase in the local sales tax for a period of 20 years to finance specified transportation improvements. The improvements, including transit and highway projects, were listed in the Transportation Expenditure Plan and were incorporated into the ballot measure. Measure A also required the Authority to adopt, in conjunction with the cities and the County of San Mateo, a Transportation System Management (TSM) Plan. The San Mateo County Transportation System Management Plan was developed and adopted in 1990.

The three primary goals of San Mateo County's TSM plan are as follows:

> **Goal 1:** To develop a coordinated countywide TSM program that: (1) examines the nature and cause of growing peak-hour traffic congestion in the county; (2) reviews available TSM techniques and implementation methods; (3) identifies TSM measures that would be effective in the county; and (4) recommends implementation of a plan by local governments and employers.
>
> **Goal 2:** To increase the efficiency of the existing transportation system in San Mateo County during peak-commute periods by: (1) reducing single-occupant auto work-trips; (2) increasing the use of public transit and other alternative modes of transportation; and (3) reducing the rate of increase in roadway usage. An initial target is to achieve a 25-percent rate of participation by employees in alternatives to single-occupant auto work-trips during peak hours within five years. In addition to relieving congestion, implementation of the recommended TSM measures would also help attain State and Federal air quality standards, and conserve energy.
>
> **Goal 3:** To establish an ongoing planning process for evaluating and refining the countywide TSM plan that: (1) evaluates the effectiveness of traffic mitigation programs; (2) recommends adjustments to existing programs where needed; and (3) promotes local and regional planning to achieve a balance between land use decisions and the demand for transportation facilities

Measures to implement the goals of the Measure A TSM effort and to encourage more efficient use of existing transportation networks were identified in the plan. These included promoting ridesharing (car and vanpools), flexible work hours, and countywide long-range planning leading to growth targets and a jobs/housing balance.

Annually, 0.7 percent of the total sales tax revenue is allocated to fund projects that further these goals. Local agencies, including cities, towns, joint powers agencies, SamTrans, and school districts, can nominate projects to receive these funds.

Local TSM/TDM Programs That Have Been Implemented In Direct Response To The Requirements Under Measure A

Local governments in San Mateo County continue to implement trip reduction programs in response to the requirements under Measure A to, among other things, maintain eligibility for Measure A funds. A variety of methods are used. Some cities have formed joint powers agencies to implement a common program and to take advantage of the cost effectiveness of consolidated efforts. The Cities of Burlingame, Foster City, San Mateo, Redwood City, San Carlos, and Belmont operate as the Inter-City TSM Agency (ITSMA). The Cities of Daly City, South San Francisco, San Bruno, Pacifica, Brisbane, Millbrae, Half Moon Bay, and Colma, have formed the Multi-City TSM Agency (MTSMA). Many of the cities in ITSMA and MTSMA are large employers themselves and have programs for their own employees. In May 2000, these two agencies have joined forces in order to provided a comprehensive program of services for the entire County. The new agency will be called The Peninsula Congestion Relief Alliance. The City of Menlo Park operates independent programs, some of which preceded Measure A. The San Francisco International Airport, the largest employer in San Mateo County, has a TSM/TDM program that includes all of the tenants at the Airport.

Peninsula Traffic Congestion Relief Alliance Programs

In May 2000, the Multi-City Transportation Systems Management Agency and the Inter-City Transportation Systems Management Agency were merged to form the Peninsula Traffic Congestion Relief Alliance, (the Alliance) a Joint Powers Authority of fifteen cities in San Mateo County. The Alliance's primary objective is to reduce the number of single occupant vehicles traveling in and through San Mateo County, reducing traffic congestion, thus improving air quality. This is done through sales, marketing and administration of transportation demand management programs provided to commuters, local employers and residents.

These TDM programs promote use of alternative modes of transportation including public transit such as SAMTRANS, Caltrain and BART, shuttle bus connectors from public transit, vanpools, carpools, residential shuttle buses, bicycling, and walking. The Alliance also provides for transit complementary programs such as the Emergency Ride Home Program and Downtown Dasher, a mid-day, on-demand taxi program.

Specific programs offered through the Alliance include the following:

Emergency Ride Home Program: Employers can provide their employees with the assurance that if the employee takes an alternative type of commute to work (other than their car) the employee can be provided a ride home if an emergency arises during the work day. The Alliance pays for 50% of the ride home either by taxi or 24-hour rental car.

Vanpool Incentive Program: Employees who agree to drive a new vanpool for six months consecutively will receive a $500 cash incentive. Other employees who agree to become passengers of the new vanpool for three months consecutively will be reimbursed half of their vanpool costs (maximum of $80 per month).

Carpool Incentive Program: Employees and residents of San Mateo County who commit to carpooling together at least 2 days per week for 8 consecutive weeks receive a one-time $40 gas card (per passenger) as an incentive.

Try Transit Program: Employees and residents of San Mateo County can try transit for free. Many of the local public transit agencies including Caltrain, SamTrans, BART, AC Transit and VTA provide tickets to get people who have not taken public transit, to try transit as a one-time incentive.

Bicycle Parking Incentive and Safety Program: Employers can provide accommodation for employees interested in bicycling to and from work by installing bicycle racks or lockers at their business. The Alliance provides 50% of the cost of the bicycle parking from basic bike racks to high security bike lockers, up to a maximum of $500 per unit.
The Alliance can also provide complimentary bicycle safety sessions for employees who are commuting by bicycle. A certified bicycle safety instructor provides rules of the road information and bicycle repair and maintenance tips.

Shuttle Program: The Alliance offers complimentary shuttle services to employees from BART and Caltrain stations through employer participation in shuttle consortium groups. This is a cooperative effort between the Alliance, SamTrans/JPB, the cities who are sponsoring the program and local employers. This partnership has fostered fourteen employer-sponsored shuttles operating in the cities of Brisbane, Burlingame, Foster City, San Carlos, San Mateo and South San Francisco. These shuttles transport, on average, 305,000 riders annually.

Commuter Benefits Consulting: The Alliance assists employers with setting up a commuter subsidy program for employers utilizing $100 per employee per month as a pre-tax payroll benefit or as a fully subsidized program for commuter checks to be used for employees who take public transit.

Downtown Dasher: An on-demand taxi service in South San Francisco, providing employees of companies East of Highway 101 with access to downtown South San Francisco during mid-day. This service promotes downtown businesses in South San Francisco and also assists in alleviating drivers of single occupant automobiles to utilize a taxi service as an alternative during the lunch hour.

Commute.org Internet Site: The Alliance's website, commute.org, provides detailed information on all Alliance programs including: forming vanpools, receiving vanpool incentives; starting a carpool and receiving the carpool incentive; the emergency ride home program; the try transit program; bicycle parking incentive and safety classes; shuttle routes and schedules; transit schedules and information. Commute.org also provides rider alerts to advise shuttle riders of changes to schedules or other pertinent information that riders may need.

City of Menlo Park Programs

The Transportation Division manages three shuttle bus routes – Willow, Marsh and Sand Hill, which operate during the AM and PM peak hours taking passengers from the train station to their business or residence. The Willow and Marsh bus routes handle an average of 70 to 90 passengers per day. However, the Sand Hill route ridership is currently below the acceptable farebox return. If the ridership does not improve in three months, this service will be dropped, and may be replaced by a taxi voucher service or some other kind of less expensive service to help accommodate those using the service. The low riderships may have been due to unemployment and the poor economy. A midday bus service for residents in Menlo Park with particular attention to service needed for senior citizens has also been initiated. These programs are funded by a combination of AB 434 Transportation Fund for Clean Air local allocation, business contributions, San Mateo County Joint Powers Board and City contribution (Measure A).

Some of the other ways that the City has advanced congestion relief efforts include:

<u>One Time Traffic Fee</u>

- Fees are based on square footage for commercial development and per dwelling unit for residential development.

<u>Annual Fee</u>

- For new office development, an annual shuttle bus fee is access per square foot per year.
- Transit passes - 3 percent of employees per year are required of new office development.

<u>Site Facility Improvements</u>

- The project is required to incorporate amenities that make commuting via alternate modes more convenient for employees of the proposed project. Improvements include bicycle Lockers, preferential parking for carpools and vanpools, central location for distribution of transit and carpooling information, a cafeteria or lunch room and shower facilities.

City of San Carlos Shuttle Program

In an effort to improve air quality, traffic circulation, create a safe route to schools, as well as offer a free and convenient transportation option to all San Carlos residents, the City of San Carlos provides a free pilot shuttle program. Services began November 2002. Five 24-passenger shuttle buses run on a limited route system and a door-to-door reservation system Monday through Friday from 6:00am to 6:45pm. Data collected after a 7-month period indicated a ridership of approaching 9,100 passengers a month. The shuttle also connects riders to the Caltrain and Samtrans Station.

A key milestone achieved by the pilot program was the reduction in traffic at a major arterial intersection. The signalized intersection before the shuttle program was operating at a level of service E (approaching F), after implementation of the shuttle program, the intersection is operating at a B and C level. Another key milestone achieved was the significant growth in ridership over a short 7-month period (i.e., weekly ridership went from 0 to 2,100 a week in 7 months). It is projected that the ridership of this program will continue to increase and reach at least 10,000 a month by January 2004.

Other Local TSM/TDM Programs

San Francisco International Airport's Program

San Francisco International Airport (SFIA) adopted a TSM program as part of the mitigation measures required under CEQA to reduce the significant transportation impacts of the airport's master plan expansion. The objective of the TSM program is to reduce travel throughout the day by private automobile, especially single-occupant vehicles. The goal of the TSM program is to attain a reduction in the percentage of air passengers and employees who come to SFIA by single-occupant vehicle of two percent each year for the first five years of the Master Plan period, and one percent each year thereafter through the end of the Master Plan. A TSM Manager developed the specific program and coordinated it with activities of SFIA tenants, San Mateo County, the City and County of San Francisco, SamTrans, BART, CalTrain, shuttle/van/taxi companies that serve SFIA, and other public agencies whose services or regulatory functions affect the mode of travel chosen by employees and air passengers. The TSM Manager will continue to meet regularly with the San Mateo County Congestion Management Agency staff and the San Mateo County Transportation Authority staff to exchange information related to traffic and transportation issues within San Mateo County and exchange progress reports on the Airport and County TSM programs. SFIA continues to have one of the highest commercial, shared ride ground access usage rates in the country, with about 40 percent of all air passengers arriving at the airport via door-to-door van, scheduled airporter, charter bus, taxi or limousine. It is too early to project the full impact of BART on airport ground access patterns, however BART is providing a 25 percent discount to/from the airport for airline employees which should encourage ridership. Beginning in FY 2003/2004 SFIA is providing a subsidy to SamTrans to maintain the recently initiated Route 397 Owl service operating between San Francisco and Palo Alto with a stop at SFIA. The subsidy is based on the number of passengers boarding or alighting at SFIA and, together with Route 292, provides 24-hour service to SFIA. This service benefits both air passengers on delayed flights arriving after BART and other ground transportation services cease operation as well as employees with shift start/end times outside normal ground transportation operating hours.

SFIA tenant trip reduction programs include flexible work hours, transit incentives, carpool/vanpool matching, preferential parking for carpools/vanpools, and guaranteed ride home. The Airport’s TSM program also includes consolidation of hotel shuttle services. As a result of this program, hotel shuttle trips have been reduced by one-third since 1999. During the same time period, the number of hotel rooms has increased by 17 percent, according to the San Mateo County Convention and Visitors Bureau, resulting in a trips/room decline of 50 percent.

The Airport's Transportation Management Program also includes a Transit Information Program for air passengers. Within the terminals, detailed ground transportation information is available at staffed information booths, through computerized kiosks adjacent to the booths and stationary kiosks located throughout the terminals. Information on ground transportation access options to SFO is also available via the City's Internet web page. The Airport's Master Plan (recently completed) incorporates several projects designed to reduce the number of single-occupant vehicles accessing the Airport. These projects include a convenient, consolidated rental car facility and the AirTrain people-mover system. The AirTrain people-mover system replaces the Airport's rental car shuttle buses, which operated a total of almost 600 round trips per day. AirTrain, powered by hydro-electricity, eliminates all emissions for these trips.

AB 434, Transportation Fund for Clean Air and Its Relationship to TSM/TDM

AB 434 provides authority for the Bay Area Air Quality Management District to impose a surcharge of up to $4 on motor vehicle registration fees. The surcharge provides funding specifically for projects that reduce air pollution from the use of motor vehicles. Types of projects eligible for AB 434 funds are listed in Table 5-4. These projects often have a positive impact on the TSM and TDM effort. This impact however, is incidental to the purpose of the funds - which is to improve air quality.

All of the funds raised through the surcharge are distributed by the District through two processes. Sixty (60) percent, referred to as the Regional Fund, are first used to fund certain District programs. These funds are distributed throughout the nine-county Bay Area on a competitive basis. The remaining 40 percent of the funds generated in each county are returned to the Program Manager(s) of that county.

Table 5-4

AB 434 Eligible Projects

- The implementation of ridesharing programs.
- The purchase or lease of clean fuel buses for school districts and transit operators.
- The provision of local feeder bus or shuttle service to rail and ferry stations and airports.
- The implementation and maintenance of local arterial traffic management, including, but not limited to, signal timing, transit signal preemption, bus stop relocation, and "smart streets".
- Implementation of rail-bus integration and regional transit information systems.
- Implementation of demonstration projects of low emission vehicles and congestion pricing of highways, bridges, and public transit.

- Implementation of a smoking vehicles program.
- Implementation of an automotive buy-back scrappage program operated by a government agency.
- Implementation of bicycle facility improvement projects that are included in an adopted countywide bicycle plan or congestion management program.

TSM/TDM and Other Elements of the CMP

Under the Land Use Impact Analysis Program (Chapter 6), C/CAG requires that a plan to mitigate all new peak hour trips be included as a condition of the approval of development agreements. A copy of this new policy and implementation guidelines is included in Appendix G. TDM measures can be used to satisfy this requirement. C/CAG strongly encourages existing developments to adopt these same measures on a voluntary basis. TSM and TDM measures also comprise BAAQMD's Deficiency List of Programs, actions, and improvements to be included in Deficiency Plans.

This page is left blank intentionally

CHAPTER 6
Land Use Impact Analysis Program

Legislative Requirements

Proposition 111 (Government Code Sections 65088-65089) requires that local governments develop a Land Use Impact Analysis Program to determine the impacts of land use decisions upon regional transportation routes and air quality. The legislation states each Congestion Management Agency must develop:

> A program to analyze the impacts of land use decisions made by local jurisdictions on regional transportation systems, including an estimate of the costs associated with mitigating those impacts. This program shall measure, to the extent possible, the impact to the transportation system using the performance measures described in paragraph (2). In no case shall the program include an estimate of the cost of mitigating the impacts of interregional travel. The program shall provide credit for local public and private contributions to improvements to regional transportation systems. However, in the case of toll road facilities, credits shall only be allowed for local public and private contributions, which are unreimbursed from toll revenues or other State or federal sources. The agency shall calculate the amount of the credit to be provided. The program defined under this section may require implementation through the requirements and analysis of the California Environmental Quality Act, in order to avoid duplication.

Legislation does not alter the constitutional discretion local jurisdictions have in making land use decisions or in determining the responsibilities of development proposals to mitigate impacts. The legislation, however, does place the San Mateo City/County Association of Governments (C/CAG) in the role of monitoring congestion on the CMP network and requiring the preparation of deficiency plans when LOS has been degraded below adopted standards.

Components of the Land Use Impact Analysis Program

The legislation does not specify the exact nature of an Impact Analysis Program; therefore, each CMA has considerable discretion in how much it chooses to require transportation improvements to overcome the impacts of land use decisions.

Roadway System

The designated CMP Roadway System comprises the roadways and intersections included in the CMP that will be subject to analysis and monitoring by C/CAG. The CMP Roadway System is defined in Chapter 2.

Travel Modeling

The Travel Demand Forecasting Model, as described in Chapter 9, will be used to determine the impacts of land use alternative and development proposals on the CMP network.

Land Use Data Base

A Land Use Information System has been developed to provide existing and projected land use data for use in the Travel Forecasting Model. This data has been collected and updated over the past two years and will be updated annually. This data was collected from all jurisdictions and reflects the most complete and accurate information available.

Review Process

C/CAG must develop a process for reviewing the impacts of land use proposals on the CMP network. C/CAG has the option of reviewing proposals at various stages of the planning process.

C/CAG has discretion about the nature of the process.

2003 Land Use Impact Analysis Program

The program has been developed as a three-tiered process. The three different tiers will provide C/CAG and jurisdictions with the technical and policy-making means necessary to determine the impacts of land use proposals on the CMP network.

Tier 1: Long Range Planning Analysis

Step 1: Testing the Impact of Future Land Use Changes

Tier 1 Analysis will determine what transportation improvements will be needed on the CMP network in the year 2025 based on a county wide land use plan, which reflects desired levels and

types of development. This analysis will be conducted for both the Congestion Management Program and the Countywide Transportation Plan.

The Travel Demand Forecasting Model will be used to identify the impacts of future land use and transportation alternatives on the CMP network. Specifically it will test what the impacts are of ABAG 2025 population and employment projections. These ABAG projections will be modified on a city-by-city basis to reflect more realistically existing and future land use conditions based on recently collected data from all jurisdictions in the County.

Step 2: Development of Capital Improvement Programs and Financial Plan

The Countywide Transportation Plan indicates which projects should be included in future capital improvement programs to relieve congestion the most effectively. C/CAG will make recommendations to the cities, County, SamTrans, Transportation Authority, and the Joint Powers Board when they formulate future capital improvement programs.

C/CAG **will** also develop a financial plan for review and consideration by all jurisdictions and agencies. The financial plan will specify how to most effectively use pools of federal, State, and local funds to implement capital improvement programs.

Tier 2: Individual Large Development Analysis

Step 1: Notification

Local jurisdictions will notify C/CAG at the beginning of the CEQA process of all development applications or land use policy changes (i.e., General Plan amendments) that are expected to generate a net (subtracting existing uses that are currently active) 100 or more peak period trips on the CMP network, within ten days of completion of the initial study prepared under the California Environmental Quality Act (CEQA). Peak period includes 6:00 a.m. to 10:00 a.m. and 3:00 p.m. to 7:00 p.m. Examples of developments that would generate 100 peak period trips include 100 single-family dwelling units; 15,000 square feet of retail space; 50,000 square feet of office space; a 150-room hotel; or 100,000 square feet of light industrial space.

Step 2: Testing of Large Development Proposals

In addition to local streets and roads, local jurisdictions will assess the impacts of large development proposals on the CMP network during their CEQA review process. All jurisdictions will report the findings of their analyses to C/CAG.

Jurisdictions may use their own site traffic impact analyses, their own travel forecasting models, or C/CAG's Travel Demand Forecasting Model to assess the impacts of large development proposals on the CMP network. If a jurisdiction uses its own travel forecasting model to assess impacts, it must be consistent with MTC's regional model and C/CAG's modeling and measurement standards. C/CAG will make consistency findings as needed.

Step 3: Mitigation and Conformance

Local jurisdictions **must** ensure that the developer and/or tenants will mitigate all of the new peak hour trips generated by the project by selecting one or more of the options that follow. It is up to the local jurisdiction working together with the project sponsor to choose the methods that will be compatible with the intended purpose of the project. This list is not all inclusive. Additional measures may be proposed for consideration by C/CAG in advance of approving the project.

1. Reduce the scope of the project so that it will generate less than 100 peak hour trips.
2. Build adequate roadway and/or transit improvements so that the added peak hour trips will have no measurable impact on the Congestion Management Program roadway network.
3. Contribute an amount per peak hour trip to a special fund for improvements to the Congestion Management Program roadway network. This amount will be set annually by C/CAG based on a nexus test.
4. Require the developer and all subsequent tenants to implement Transportation Demand Management programs that mitigate the new peak hour trips. A list of acceptable programs and the equivalent number of trips that are mitigated will be provided by C/CAG annually. Programs can be mixed and matched so long as the total mitigated trips is equal to or greater than the new peak hour trips generated by the project. These programs, once implemented, must be on-going for the occupied life of the development. Programs may be substituted with prior approval of C/CAG, so long as the number of mitigated trips is not reduced. Additional measures may be proposed to C/CAG for consideration. Also there may be special circumstances that warrant a different amount of credit for certain measures. These situations can also be submitted to C/CAG in advance for consideration.

Step 4: Credit for Contribution

If a jurisdiction is required to prepare a deficiency plan for a CMP roadway segment or intersection for which it has previously used local public or private funds to help prevent the degradation of LOS, then C/CAG will give that jurisdiction credit for its prior contribution and appropriately reduce the amount of mitigation required by the deficiency plan. C/CAG will develop and adopt a procedure for calculating the amount of credit to be provided.

Tier 3: Cumulative Development Analysis

Step 1: Notification

Once every two years, local jurisdictions will inform C/CAG of all development proposals or land use changes that will replace or add to current or projected levels of development. This process will update the land use data base used by the Travel Forecasting Model every two years.

Step 2: Testing of Cumulative Impacts

Annually, C/CAG staff or a designated consultant will test the impacts of cumulative development throughout the County on the CMP network. Results of this analysis will be reported to C/CAG and local jurisdictions in San Mateo County.

Step 3: Analysis of Results

This cumulative analysis may be used to determine existing LOS on the CMP network or to project future LOS. This analysis may be used for several purposes: (1) identifying where existing LOS has been degraded, (2) anticipating future congested hot spots on the CMP network, (3) shifting project priorities in capital improvement programs, and (4) providing data for jurisdictions to use in the development of site traffic impact analyses and environmental assessments.

Step 4: Reporting Changes

The results of the analysis in Step 3 will be provided to local jurisdictions in order to alert them of locations within their boundaries where the amount of congestion is approaching the Level of Service Standard. Hopefully this information can be used to avert the need for the development of some deficiency plans.

Implementation Guidelines

A copy of the Guidelines for implementing the land use component of the congestion management program is in Appendix G.

Compliance Monitoring

Status of the land use impact analysis program compliance monitoring is included in Appendix G.

(This page is intentionally blank)

CHAPTER 7
Deficiency Plan Guidelines

The legislation that resulted in the preparation of Congestion Management Programs (CMPs) defined the preparation of deficiency plans as a way for local jurisdictions (cities and the County) to remain in conformance with the CMP when the level of service (LOS) for a CMP roadway segment or intersection deteriorates below the established standard. A CMP roadway segment or intersection can be found to violate the LOS standard when levels of service are monitored biennially.

California Government Code Section 65089.1(b)(1)(B) states:

> In no case shall the LOS standards established be below the Level of Service E or at the current level, whichever is further from Level of Service A, except where a segment or intersection has been designated as deficient and a deficiency plan has been adopted pursuant to Section 65089.3.

The LOS standards for the roadway segments and intersections included in San Mateo County's CMP are presented in Chapter 3. When deterioration of the level of service on a given CMP roadway segment or intersection has not been prevented and a violation is identified through the monitoring process, the legislation provides local jurisdictions with the following two options for them to remain in conformance with the CMP:

a. Implementation of a specific plan to correct the LOS deficiency on the affected network segment; or

b. Implementation of other measures intended to result in measurable improvements in the LOS on the systemwide CMP Roadway System and to contribute to significant improvements in air quality.

In some situations, meeting the CMP's LOS Standards may be impossible or undesirable. For these situations, deficiency plans allow local jurisdictions to adopt innovative and comprehensive transportation strategies for improving the traffic LOS on a systemwide basis rather than adhering to strict, site-specific traffic LOS standards that may contradict other community goals. In other words, deficiency plans allow a violation of the traffic LOS to occur on one particular CMP roadway segment or intersection in exchange for improving other transportation facilities or services (e.g., transit, bicycles, walking, or transportation demand management). For example, it may be impossible to modify a CMP roadway to meet its LOS standard because there is insufficient right-of-way available to add the number of lanes that would be necessary for that roadway segment or intersection to operate acceptably at the desired LOS. Should deficiency plans need to be prepared, alternate goals, such as higher density development near transit stations or better transit service, can be pursued.

Deficiency plans provide local agencies with an opportunity to implement many programs and actions that will improve transportation conditions and air quality. Some of these programs and actions include:

- Directly coordinating the provision of transportation infrastructure with planned land uses;
- Building new transit facilities and enhancing transit services;
- Providing bicycle facilities connecting with other transportation systems (transit stations, park-n-ride lots);
- Strengthening transportation demand management (TDM) programs;
- Encouraging walking by providing safe, direct, and enjoyable walkways between major travel generators.

In addition, having to produce deficiency plans will affect the local land use approval process. For example, a local jurisdiction may have the discretion to deny approval of a development project if it is shown to negatively affect an already deficient CMP system roadway or intersection. Alternatively, to be approved, the sponsor of the development project could participate in the implementation of those actions emanating from a deficiency plan.

It is the intent of C/CAG to encourage local jurisdictions that may be responsible for the preparation of deficiency plans to connect the actions of deficiency plans with the overall countywide transportation planning process. Doing so will ensure that the action items in the deficiency plan are consistent with the goals of the CMP to increase the importance of transit, ridesharing, TDM measures, bicycling, and walking as ways to improve air quality and reduce congestion.

Legislative Requirements

The language describing the role and function of deficiency plans is found in California Government Code Section 65089.4, which states that:

(a) The agency[1] shall monitor the implementation of the elements of the congestion management program. At least biennially, the agency shall determine if the county and cities are conforming to the congestion management program, including, but not limited to, all of the following:

(1) Consistency with the levels of service and performance standards, except as provided in subdivisions (b) and (c).

(2) Adoption and implementation of a trip reduction and travel demand ordinance.

(3) Adoption and implementation of a program to analyze the impacts of land use decisions, including the estimate of the costs associated with mitigating these impacts.

(b) (1) A city or county may designate individual deficient segments or intersections which do not meet the established level of service standards if, prior to the designation, at a noticed public hearing, the city or county has adopted a deficiency plan which shall include all of the following:

(A) An analysis of the causes of the deficiency.

(B) A list of improvements necessary for the deficient segment or intersection to maintain the minimum level of service otherwise required and the estimated costs of the improvements.

(C) A list of improvements, programs, or actions, and estimates of costs that will (i) measurably improve the level of service of the system, as defined in subdivision (b) of Section 65089, and (ii) contribute to significant improvements in air quality, such as improved public transit service and facilities, improved nonmotorized transportation facilities, high occupancy vehicle facilities, and transportation control measures. The air quality management district or the air pollution control district shall establish and periodically revise a list of approved improvements, programs, and actions which meet the scope of this paragraph. If an improvement program or action is on the approved list and has not yet been fully implemented, it shall be deemed to contribute to significant improvements in air quality. If an improvement program or action is not

[1]In San Mateo County, C/CAG is the agency referred to in the statute.

on the approved list, it will not be implemented unless approved by the local air quality management district or air pollution control district.

(D) An action plan, consistent with the provision of Chapter 5 (commencing with Section 66000) of Division 1 of Title 7,[2] that shall be implemented, consisting of improvements identified in paragraph (B), or in improvements, programs, or actions identified in paragraph (C), that are found by the agency to be in the interest of the public's health, safety and welfare. The action plan shall include a specific implementation schedule.

(2) A city or county shall forward its adopted deficiency plan to the agency. The agency shall hold a noticed public hearing within 60 days of receiving the deficiency plan. Following the hearing, the agency shall either accept or reject the deficiency plan in its entirety, but the agency may not modify the deficiency plan. If the agency rejects the plan, it shall notify the city or county of the reasons for that rejection.

(c) The agency, after consultation with the regional agency, the department, and the local air quality management district or air pollution control district, shall exclude from the determination of conformance with the level of service standards, the impacts of any of the following:

(1) Interregional travel.

(2) Construction, rehabilitation, or maintenance of facilities that impact the system.

(3) Freeway ramp metering.

(4) Traffic signal coordination by the state or multi-jurisdictional agencies.

(5) Traffic generated by the provision of low and very low income housing.

(6) Traffic generated by high-density residential development located within one-fourth mile of a rail passenger station.

(7) Traffic generated by any mixed-use development located within one-fourth mile of a fixed rail passenger station, if more than half of the land area, or floor area, of the mixed-use development is used for high-density residential housing, as determined by the agency.

[2]This chapter describes the procedures allowed or required in order to implement development mitigation fees. It includes adoption requirements, allowable categories for fees including transportation, procedures for property donation, and procedures for assessment and payment of the fees.

(d) For the purposes of this chapter, the impacts of a trip which originates in one county and which terminates in another county shall be included in the determination of conformance with level of service standards with respect to the originating county only. A round trip shall be considered to consist of two individual trips.

The procedures for a finding of nonconformance are found in California Government Code Section 65089.5, which states:

(a) If, pursuant to the monitoring provided for in Section 65089.3, the agency determines, following a noticed public hearing, that a city or county is not conforming with the requirements of the congestion management program, the agency shall notify the city or county in writing of the specific areas of nonconformance. If, within 90 days of the receipt of the written notice of nonconformance, the city or county has not come into conformance with the congestion management program, the governing body of the agency shall make a finding of nonconformance and shall submit the finding to the commission and to the Controller.

(b) Upon receiving notice from the agency of nonconformance, the Controller shall withhold apportionments of funds required to be apportioned to that nonconforming city or county by Section 2105 of the Streets and Highways Code, until the Controller is notified by the agency that the city or county is in conformance.

In addition, per SB 1435, a nonconforming jurisdiction will be disqualified from receiving funding from the Transportation Equity Act for the 21st Century (TEA-21).

Discussion

The many issues influencing the preparation and adoption of deficiency plans are discussed in the following pages using a question and answer format.

1. Why prepare a deficiency plan?

   A jurisdiction (a city or the County) should prepare a deficiency plan to achieve two key goals:

   - To establish a program of actions intended to mitigate (or reduce) existing congestion by improving the level of service on the roadway segments or intersections included in the CMP Roadway System, and

   - To assure that the jurisdiction is in conformance with the CMP and remains eligible to continue to receive gasoline tax subventions and TEA-21 funds.

The responsible jurisdiction(s) must prepare a deficiency plan when it (or they) has been notified by C/CAG that a deficiency has occurred. The responsible jurisdiction will forego additional gasoline tax subventions (pursuant to Section 2105 of the Streets and Highways Code) and funding from TEA-21 unless it (or they) prepares a deficiency plan. If no response is forthcoming, C/CAG will declare the jurisdiction with the deficiency to not be in conformance with the CMP.

2. What triggers the deficiency plan process?

   The deficiency plan process is triggered when a CMP roadway segment or intersection is found to be "deficient" because it operates below its adopted LOS standard with the adjustments for all exclusions allowed by law. California Code Section 65089.3 states that a deficiency finding could emanate from the results of the LOS monitoring process. An LOS deficiency may also be found to exist as a result of a monitoring program developed by a city or the county as part of the approval process for a local land use decision, as discussed in Chapter 6. Only actual deficiencies, not projected deficiencies, will trigger the requirement for a deficiency plan.

3. What trips can be excluded from the deficiency determination?

   As required in California Government Code Section 65089.3 and added to by AB 3093, the following types of travel shall be removed from the level of service calculation; interregional travel; changes in operating conditions resulting from the construction, rehabilitation, or maintenance of facilities that impact the roadway system; freeway ramp metering; traffic signal coordination by the state or a multi-jurisdictional agency; traffic generated by the provision of low and very low income housing; trips generated by high-density housing near rail stations; and trips generated by mixed-use development near rail stations. Trips which originate in one county and which terminate in another county are to be included in the determination of conformance with level of service standards in only the county where the trips originated. Therefore, the statute establishes that only trips originating inside San Mateo County will be taken into account toward the LOS determination for the purpose of establishing conformance with the CMP.

4. Who is responsible for the preparation of deficiency plans?

   Local jurisdictions are responsible for the preparation of deficiency plans for roadway segments or intersections that are wholly within their boundaries. For deficient segments or intersections within more than one jurisdiction, all affected jurisdictions will collaborate in the preparation of a deficiency plan. C/CAG strongly encourages the cooperative development of deficiency plans. If a common approach is not acceptable to all jurisdictions involved, then each individual jurisdiction will be responsible for preparing a deficiency plan for the affected roadway(s) or intersection(s) within its jurisdiction. C/CAG can accept all of the plans if they are complementary. If they are not complementary, C/CAG can require that complementary plans be developed.

5. What if a deficiency occurs due to an action by a jurisdiction not located within San Mateo County?

   Representatives of all affected jurisdictions, those receiving the deficient location and those causing the deficiency, could develop a coordinated deficiency plan. Otherwise, the Metropolitan Transportation Commission (MTC), serving as the Regional Congestion Management Agency, would arbitrate between or among the jurisdictions. If MTC is not successful in their arbitrations, no penalties will be sanctioned against the jurisdictions located within San Mateo County.

6. What are the required components of a deficiency plan?

   The contents of a deficiency plan are defined on pages 7-3 and 7-4 part (b) of Section 65089.3. The following is a summary description of those items:

   - An analysis of the causes of the deficiency;
   - A list of improvements and the costs that will be incurred to mitigate that deficiency on that facility itself;
   - A list of possible actions and costs that would result in improvements to the CMP system's LOS and that would be beneficial to air quality; and
   - An action plan, including a schedule, to implement improvements from the two lists identified above.

7. What improvements are acceptable for inclusion in a deficiency plan?

   The process of preparing a deficiency plan allows a local jurisdiction to choose one of two options for addressing deficiencies. The two options are:

   a. To implement improvements directly on the deficient segments designed to eliminate the deficiency; or

   b. To designate the segment as deficient, and implement a deficiency plan prescribing actions designed to measurably improve the overall LOS and contribute to *significant* air quality improvements throughout the CMP Roadway System. Such actions may not necessarily directly pertain to or have a measurable impact on the deficient segment itself.

   If a local jurisdiction chooses the second option (b), the Bay Area Air Quality Management District (BAAQMD) has created a list of system deficiency plan measures that are regarded as beneficial for air quality. The latest list was approved by the BAAQMD on November 4, 1992, and is included in Appendix C (of this CMP). Measures not on the BAAQMD list may also be used, but will need to be evaluated by the BAAQMD for their air quality impacts prior to being included as part of a deficiency plan. If a local jurisdiction

selects the first option (a), measures designed to meet LOS standards on the deficient roadway(s) need not be drawn from the BAAQMD list, and they need not be approved by the BAAQMD.

8. How long does a jurisdiction have to prepare a deficiency plan?

   Jurisdictions will be notified that a level of service deficiency has occurred when the results of the LOS monitoring are provided to C/CAG. The results will be submitted to C/CAG who will notify local jurisdictions, in writing, if any deficient locations have been identified. Local jurisdictions will then have up to twelve months from the receipt of written notification of the conformance findings, to develop and adopt at a public hearing, any required deficiency plans.

   The deficiency plan process section of this Chapter provides more detail about time lines.

9. How is a deficiency plan adopted?

   A deficiency plan is prepared by the affected local jurisdiction(s). The jurisdictions may elect to submit draft plans to C/CAG's Technical Advisory Committee (TAC) and Congestion Management and Air Quality Committee (CMAQ) for review to determine if the plan may be considered acceptable when submitted to C/CAG for approval. The deficiency plan must then be adopted by the affected jurisdiction(s) at a public hearing and then approved by C/CAG.

10. What constitutes an acceptable deficiency plan?

    An acceptable deficiency plan shall contain all the components listed in the response to Question 6 above, and may be reviewed by the TAC and CMAQ prior to action by C/CAG. The TAC and/or CMAQ may make a recommendation related to approval or rejection of the deficiency plan to C/CAG, but it is not required that they make a recommendation. The plan will be evaluated on the following technical criteria:

    a. Completeness as required in California Government Code Section 65089.3.

    b. The appropriateness of the deficiency plan's actions in relation to the magnitude of the deficiency.

    c. The reliability of the funding sources proposed in the deficiency plan.

    d. The reasonableness of the implementation plan's schedule.

    e. The ability to implement the proposed actions (including the degree of jurisdictional authority).

11. How should deficiency plans relate to the countywide transportation planning process?

    Actions included in deficiency plans should be selected from information and decisions made as part of the countywide transportation planning process, including land use and travel forecasts, transit operational needs, and planned capital and service improvements. Likewise, the occurrence or projection of deficiencies should be a factor influencing the decisions made within the ongoing countywide transportation planning process to amend the Capital Improvement Program (CIP).

The Guidelines for Deficiency Plan is included in Appendix D.

Current Deficiencies

The City/County Association of Governments of San Mateo County (C/CAG) has retained Fehr & Peers Transportation Consultants to conduct the 2003 congestion monitoring of the 53 roadway segments and 16 intersections that comprise the CMP Roadway System in San Mateo County. A copy of the CMP Congestion Monitoring Report is included in Appendix F.

The results indicate that four of the 53 roadway segments are in violation of the LOS Standard in 2003. These locations are illustrated on Figure 4 and listed below:

- SR 1, San Francisco County Line to Linda Mar Boulevard
- SR 84, Willow Street to University Avenue
- I-280, San Francisco County Line to SR 1 (north)
- I-280, SR 1 (south) to San Bruno Avenue

These four segments also violated their standard in 2001. The following five roadway segments that violated the LOS Standard in 2001 were found not to be in violation in 2003:

- SR 84, SR 1 to Portola Road
- SR 84, I-280 to Alameda de las Pulgas
- SR 84, US 101 to Willow Street
- SR 92, I-280 to US 101
- SR 92, US 101 to Alameda County Line

These five segments are operating at LOS D or better. Widening of SR 92 bridge and the observed decrease in traffic volumes due to the economic downturn may have contributed to the improved levels of service at these locations.

A number of San Mateo County jurisdictions have been identified as being connected to these segments. This number will increase substantially when the jurisdictions not physically connected to these segments but contributing 10% of the offending traffic are also included. It is likely that a number of jurisdictions will have to participate in multiple deficiency plans because of the traffic contributed by that jurisdiction to the deficient locations in several areas.

The C/CAG Board approved the Countywide Congestion Relief Plan, which is a countywide deficiency plan to address these and future deficiencies. This Plan will relieve all San Mateo County jurisdictions - 20 cities and the County - from having to develop and implement individual deficiency plans for current Level of Service (LOS) changes and any that may be detected for the next four years, starting from July 1, 2002, resulting from roadway LOS monitoring. An executive summary of the Plan is shown below.

Executive Summary Of San Mateo County Congestion Relief Plan (Deficiency Plan)

This Congestion Relief Plan is necessary because a number of locations throughout the County have been determined through traffic counts to have congestion that exceeds the standards that were adopted by C/CAG as part of the Congestion Management Program. Although the Plan is a legal requirement and enforceable with financial penalties, it is more important that the Plan be viewed as an opportunity to make a real impact in congestion that has been allowed to go unchecked for many years. A key factor in developing the Plan has been for C/CAG to respect and support the economic development done by local jurisdictions to make San Mateo County prosperous and to ensure a sound financial base to support local government. Economic prosperity however, has created severe traffic problems, which if not properly addressed, will threaten that same prosperity. Therefore this Plan aims to find ways to improve mobility Countywide and in each and every jurisdiction, while not putting a halt to this economic growth.

The Plan being proposed will relieve all San Mateo County jurisdictions - 20 cities and the County - from having to fix the specific congested locations that triggered the development of this Plan, and any new ones that may be detected for the next four years, starting from July 1, 2002.

The following elements are intended to be a comprehensive package of policies and actions that together will make a measurable impact on current congestion and slow the pace of future congestion:

1. Expand the Countywide Employer-Based Shuttle Program.

Recommendation: Increase the permanent funding available for the Countywide Employer Shuttle program of proven effectiveness. This shuttle program focuses on connecting employment centers to transit centers (both BART and Caltrain). The cost to the 20 cities and the County for this component will be $500,000 based on each jurisdiction's share of automobile trips both generated and attracted as a percent of the Countywide total. It is anticipated that these funds will be matched dollar for dollar by a combination of Transportation Authority, SamTrans, Joint Powers Board, and/or employer contributions. The benefit to the cities and the County will be the creation of new employer-based shuttles for the residents and employers in the community.

2. Create a network of Local Transportation Services.

Recommendation: The intent of this recommendation is to increase the use of public transit by the residents of each local community, thereby reducing local congestion. Local jurisdictions will be encouraged to participate in experimental efforts to provide transportation services for its residents that meet the unique characteristics and needs of that jurisdiction. A Countywide pool of funds of approximately $1 million dollars will be established and made available to match local jurisdiction efforts on a dollar for dollar basis. It will be up to each jurisdiction to determine how these services will be organized, the type of service to be provided, and the amount of contribution that the jurisdiction wishes to make. The benefit to the jurisdiction will be the creation or expansion of local transportation services that focus primarily on connecting that jurisdiction's residential areas with downtown, employment centers, schools, and transit stations.

3. Expand the Provision of Countywide Transportation Demand Management Programs and 4. Creation of a Countywide "Try Transit" Campaign.

Recommendation: Increase the permanent funding available for Countywide Transportation Demand Management projects of proven effectiveness through the Peninsula Congestion Relief Alliance. Employees and residents of San Mateo County can try transit for free. Many of the local public transit agencies including Caltrain, SamTrans, BART, AC Transit and VTA provide tickets to get people who have not taken public transit, to try transit as a one-time incentive. The cost to the cities and the County for this component will be $500,000 based on each jurisdiction's share of automobile trips both generated and attracted as a percent of the Countywide total. The benefit to the cities and the County will be the creation of new employer-based initiatives that encourage and support workers taking alternative transportation modes to and from work.

4. Develop a Countywide Intelligent Transportation Study and Plan.

Recommendation: New technologies and other techniques can improve the efficiency of the existing transportation infrastructure. In order to be truly effective, these systems must be implemented on a regional basis, and not only in selected locations. This recommendation is to fund a comprehensive plan and recommendations for the implementation of state-of-the-art intelligent transportation systems throughout San Mateo County. The plan will include an evaluation of the current technology, estimated traffic improvements resulting from implementation of the plan, and anticipated cost of deploying and maintaining the system. The cost to the cities and the County for this component will be $200,000 based on each jurisdiction's share of automobile trips both generated and attracted as a percent of the Countywide total. These funds will be matched dollar for dollar by the Transportation Authority. The benefit to the cities and the County will be the improvement of mobility within and through each community as a result of the more efficient use of the existing roadway and freeway network.

5. Develop a Countywide Ramp Metering Study and Plan for U.S. 101 Corridor.

Recommendation: Currently each jurisdiction in which a ramp-metering site is located must develop an agreement with Caltrans before that site is activated. This recommendation is to develop a Countywide approach. C/CAG will first commission a detailed operational analysis of the Route 101 corridor. C/CAG staff will work closely with the staffs of its member cities in creating a detailed work plan for this study and to identify a recommended list of criteria for C/CAG to consider before determining if ramp metering should be implemented. This work plan will be subject to the review and recommendation of the Technical Advisory Committee (TAC) and the Congestion Management and Air Quality Committee (CMAQ) of C/CAG. The C/CAG Board will ultimately determine the acceptability of the work plan. The operational analysis will also include the impacts of ramp metering on local streets and roads. This analysis is currently conducted by an independent contractor, DKS Associates, under the direction of C/CAG and will identify the congestion relieving benefits (if any) for specific locations. The staffs of local jurisdictions, the TAC, and CMAQ will continue to be involved in all aspects of the study and the formulation of recommendations for C/CAG. After consideration of this study and the recommendations of the TAC and CMAQ, C/CAG would decide whether to enter into a Countywide agreement with Caltrans for the activation of ramp metering along any parts of the Route 101 corridor. No location will be activated without conducting the analysis or without the prior authorization of the C/CAG Board. Local jurisdictions impacted by the outcomes of the study will have an opportunity to review and comment on any recommendations before they are presented to the C/CAG Board for consideration. The cost to the cities and the County for this study will be $100,000 based on each jurisdiction's share of automobile trips both generated and attracted as a percent of the Countywide total. These funds will be matched dollar for dollar by the Transportation Authority. The benefit to the cities and the County will be the improvement of mobility within and through the community as a result of the more efficient use of the existing roadway and freeway network.

6. Expansion of the Transit-Oriented Development Program

Recommendation: Expand the Transit Oriented Development Program to include incentives for concentrated housing developments and employment centers within one-third of a mile of a fixed rail station. The incentives could be in the form of transit subsidies, flexible work hours, guaranteed ride home program, etc. There is no financial contribution required of the cities or the County to participate in this incentive program. If a city or the County approves a project(s) meeting these criteria and that are subsequently built, they will qualify for funding to make roadway and other community improvements that make it more attractive and convenient for walking and bicycle travel.

SUMMARY

Under this Plan, the cities and the County will be assessed a total of $1.3 million on an annual basis for the four year period of the Plan, starting from July 1, 2002. This amount represents each jurisdiction's share of the total cost of the Plan based on that jurisdiction's percent of automobile trips both generated and attracted as a percent of the Countywide total. It is anticipated that the local jurisdiction's contribution will be more than quadrupled as a result of the generation of matching funds to support the Plan. Also, as a participant in this Plan the cities and the County will be exempt from any deficiency planning requirements for the next four years, starting from July 1, 2002, that are the result of a roadway segment or intersection exceeding the Level of Service Standard set forth in the Congestion Management Program.

TOTAL ANNUAL COST TO IMPLEMENT COUNTYWIDE DEFICIENCY PLAN BY JURISDICTION

		1	2	3 & 4	5	6	7	
	% of Trip Generation	*Employer Based Shuttles	#Local Service	*TDM Programs	*ITS Plan	*Ramp Metering Study	+TOD Programs	Total Annual Cost
Atherton	1.5	$7,500		$7,500	$3,000	$1,500		$19,500
Belmont	3.3	$16,500		$16,500	$6,600	$3,300		$42,900
Brisbane	1.7	$8,500		$8,500	$3,400	$1,700		$22,100
Burlingame	5.0	$25,000		$25,000	$10,000	$5,000		$65,000
Colma	1.3	$6,500		$6,500	$2,600	$1,300		$16,900
Daly City	9.8	$49,000		$49,000	$19,600	$9,800		$127,400
East Palo Alto	2.4	$12,000		$12,000	$4,800	$2,400		$31,200
Foster City	4.3	$21,500		$21,500	$8,600	$4,300		$55,900
Half Moon Bay	1.0	$5,000		$5,000	$2,000	$1,000		$13,000
Hillsborough	1.0	$5,000		$5,000	$2,000	$1,000		$13,000
Menlo Park	6.3	$31,500		$31,500	$12,600	$6,300		$81,900
Millbrae	2.8	$14,000		$14,000	$5,600	$2,800		$36,400
Pacifica	3.4	$17,000		$17,000	$6,800	$3,400		$44,200
Portola Valley	1.1	$5,500		$5,500	$2,200	$1,100		$14,300
Redwood City	13.8	$69,000		$69,000	$27,600	$13,800		$179,400
San Bruno	3.7	$18,500		$18,500	$7,400	$3,700		$48,100
San Carlos	4.4	$22,000		$22,000	$8,800	$4,400		$57,200
San Mateo	14.5	$72,500		$72,500	$29,000	$14,500		$188,500
South San Francisco	9.2	$46,000		$46,000	$18,400	$9,200		$119,600
Woodside	1.0	$5,000		$5,000	$2,000	$1,000		$13,000
San Mateo County	8.5	$42,500		$42,500	$17,000	$8,500		$110,500
Required Assessment	100.0	$500,000		$500,000	$200,000	$100,000		$1,300,000
Other Resources		$500,000	$1,000,000		$200,000	$100,000	$3,000,000	$4,800,000
Optional City/County Contribution			$1,000,000					$1,000,000
Total Program Value		$1,000,000	$2,000,000	$500,000	$400,000	$200,000	$3,000,000	$7,100,000

*** Distribution of these assessments is based on the % of Countywide automobile trips generated by jurisdiction.**
 # Local jurisdictions can apply for the Local Service matching funds on a dollar for dollar basis.
+ Current STIP dedication is $6 million for 2 years and will be evaluated after that time period.

CHAPTER 8
Seven-Year Capital Improvement Program

Legislative Requirements

California Government Code 65089.b.5 requires that the CMP include a seven-year Capital Improvement Program (CIP) to maintain or improve the Traffic Level of Service Standards and to mitigate impacts to the regional transportation system of land use decisions made by local jurisdictions (cities and the County). The CIP must also conform to the requirements of transportation-related programs to mitigate air quality problems.

Discussion

The purpose of the CIP is to identify transportation system improvements, (i.e., projects) that would maintain or improve traffic levels of service, transit services, and mitigate regional transportation impacts identified through the Countywide Transportation Plan and the Land Use Impact Analysis Program. Any project depending on State or Federal funding must be included in the CMP CIP. This part of the CMP must be submitted first to the Metropolitan Transportation Commission in the Bay Area and then to the California Transportation Commission (CTC) and/or the Federal Highway Administration so that funding from State and Federal programs will be allocated for the projects included in the CIP.

Funding is made available under the CMP from the State and Federal governments for transportation system maintenance and improvement projects. The CIP that is included in each CMP may be somewhat different from the CIP included in previous CMPs because of changes in the funding programs or the evaluation criteria. (The status of prior years CMP CIP projects is discussed in the Monitoring Report in Appendix F.) The following paragraphs present a summary of the funding sources available for the current CMP. Although these funding sources provide the bulk of the funding for San Mateo County transportation projects, it is important to understand that these funding sources are limited and will not fully address the CIP needs as presently identified. C/CAG will investigate possible means of dealing with the shortage.

In the past, federal funds have been derived from the Transportation Equity Act for the Twenty-First Century (TEA-21) which included two primary financing programs for local projects: the Surface Transportation Program (STP) and the Congestion Mitigation and Air Quality Program (CMAQ). Projects that are currently funded under these programs are listed in Appendix F. The next funding cycle under these Federal programs is expected to be available for projects to be implemented during the period of October 2004 through September 2009.

State funding for local transportation projects is available primarily through the State Transportation Improvement Program (STIP). A list of the projects funded under this program is included in Appendix F. On January 8, 2004, C/CAG will consider a list of projects recommended to receive 2004 STIP funds. The specific projects are detailed in Table 8-1.

Other Funding Sources for San Mateo County Transportation Projects

There are several other sources of funds for transportation projects in San Mateo County. One of the major sources of funds is the Measure A sales tax increase passed in San Mateo County on June 7, 1988. The ballot measure created the San Mateo County Transportation Authority and authorized an increase in the retail sales/use tax of one-half of one percent for 20 years in order to finance the construction of certain transportation improvements. These improvements include both public transit and highway projects and are listed in the Transportation Expenditure Plan. The Transportation Authority was authorized to issue bonds to finance the improvements up to an aggregate amount of $804 million, the anticipated total revenue of the sales tax increase.

The Transportation Authority has prepared a Strategic Plan to prioritize the improvements. Many of those improvements will also require state and federal funding and are part of the CMP. A list of Measure A projects is included in Appendix I. A portion of the Measure A sales tax revenue (0.7 percent) will fund transportation system management (TSM) projects.

Proposed 2004 State Transportation Improvement Program (STIP)								
Implementing Agency	**Project Title**	**2004 RTIP Only**	**2004 RTIP Funding by Fiscal Year**					**ITIP**
			04/05	05/06	06/07	07/08	08/09	
Caltrans	SR 1 - Devil Slide Bypass Tunnel	$750	$750					$750
San Mateo TA	SR 101 - Auxilliary Lane (3rd to Millbrae Ave)	$27,675		$27,675				$15,211
Caltrans	SR 92 - Half Moon Bay Widening	$3,843			$3,843			
Caltrans	SR 101 - Auxilliary Lane (SCL Co. Line to Marsh Rd)	$18,106			$1,151	$16,955		
Caltrans	SR 92 - Shoulder widening & Curve Correction-Pilarcitos Ck.)	$2,619			$2,619			
Caltrans	SR 92 - Slow Vehicle Lanes from SR 35 to I-280	$12,540					$12,540	
BART	SFO Extension bike/ped path (SO)	$2,120				$2,120		
Caltrans	SR 101 - Willow Road Interchange Reconstruction	$10,961			$1,940		$9,021	
San Mateo TA	Caltrain - Tilton/Popular Grade Separation	$8,485			$8,485			
	Total:	$87,099	$750	$27,675	$18,038	$19,075	$21,561	$15,961

The current Measure A is set to expire at the end of Calendar Year 2008. Various interest groups are working to initiate a ballot measure to have this ½ cent sales tax extended for an additional 20 years (commencing January 1, 2009 and terminating December 31, 2028). Projects are being identified to develop an implementation strategy which will be presented to the voters in November 2004.

Other sources of potential funding for transportation improvements and maintenance projects are as follows:

- Proposition 111 ¥ Gas tax revenues allocated to local jurisdictions
- Transportation Fund for Clean Air ¥ Programs to enhance air quality funded by increased vehicle registration fees (see Chapter 5)
- Bridge Replacement and Rehabilitation funds
- Proposition 108 ¥ Passenger Rail and Clean Air Bond Act of 1990
- Proposition 116 ¥ Clean Air and Transportation Improvement fund (also enacted in 1990)
- Regional Bridge Tolls
- Transportation Development Act funds
- Transit Capital Improvement funds
- Transit operator funds
- San Francisco International Airport MOU Funds

Regional Transportation Plan Projects

The Regional Transportation Plan (RTP) is a fiscally constrained planning document that identifies the projects in the region that can be funded through the Year 2025 based on a careful review of all the funding sources anticipated to be available. Each Congestion Management Agency within the Bay Area Region has had its projects classified into four categories – Committed Projects; Track One projects are fully funded based on the projected funds available through 2025; Track Two (MTC Blueprint) projects are additional projects that do not have funding or are partially funded; and Interregional Transportation Improvement Projects (ITIP) are projects that are discretionary with Caltrans and subject to approval by the California Transportation Commission. The projects for San Mateo County that fall in these categories are included in Appendix H.

MTC launched an 18-month effort in June 2003 to write the new RTP, the Transportation 2030 Plan, which is scheduled for approval in January 2005. C/CAG is working closely with MTC, local jurisdictions in San Mateo County, the San Mateo County Transportation Authority (TA), San Mateo County Transit District (SamTrans), the Peninsula Joint Powers Board (JPB), California Department of Transportation (Caltrans), and other transportation agencies to identify a set of fiscally constrained projects which will make up the Transportation 2030 Plan.

CHAPTER 9
Data Base and Travel Model

Legislative Requirements

California Government Code section 65089 (c) requires that every Congestion Management Agency (CMA), in consultation with the regional transportation planning agency, cities, and the county, develop a uniform data base to support a countywide transportation computer model that can be used to project traffic impacts associated with proposed land developments. Each CMA must approve computer models used for county subareas, including models used by local jurisdictions for their own land use impact analysis purposes. All models must be consistent with the modeling methodology and data bases used by the regional transportation planning agency.

Discussion

The purpose of the requirements presented above is to establish uniform technical assumptions and methodology for the congestion management process. Included in possible decisions must be consideration of the benefits of transit service and transportation demand management programs, as well as highway projects, to alleviate potential congestion on the designated CMP Roadway System. The modeling requirement is also intended to assist local agencies in assessing the impacts of new land development(s) on the transportation system.

The San Mateo Countywide Travel Demand Forecasting Model is a tool essential to the success of the ongoing CMP planning process. Application of the model will allow the C/CAG to project the potential impacts of local land development decisions on the CMP Roadway System.

Land Use Data Base Development

The land use data base that will be used in conjunction with the Countywide Travel Demand Forecasting Model is based primarily on data from the 1990 Census of Population for existing residential uses and projections summarized in the *Projections '00* report prepared by the Association of Bay Area Governments (ABAG). Projections of socioeconomic variables were made for the traffic analysis zones defined for San Mateo County. Aggregations of the zonal projections make it possible to produce projections of socioeconomic characteristics for individual unincorporated areas and the 20 cities in the County.

Model Development

The original Countywide Travel Demand Forecasting Model was developed in 1993. A technical description of the work that was conducted to develop and validate the model is provided in the *San Mateo County Travel Demand Forecasting Model, Documentation,* Barton-Aschman Associates, Inc., January 1994. In May 1996 a number of refinements and enhancements were made to the countywide model, specifically with respect to the zonal level of detail in the vicinity of transit corridors, and to the structure and performance of the mode choice models. In November 2001, additional refinements were made to the trip generation models (to conform to the recently completed *MTC-Baycast* model) and highway assignment models. The model land use was updated to ABAG Projections 2000 and the base year validation was performed to year 2000 highway and transit counts. The countywide model produces 3-hour peak period trips for AM and PM.

The framework established for the model encompasses the following five components: trip generation, trip distribution, mode choice, highway assignment, and transit assignment. These are the typical model components found in any model whose purpose is to produce simulations of travel demand based on different assumptions about land use, demographic, and transportation system characteristics.

The San Mateo Countywide Travel Demand Forecasting Model was implemented using the EMME/2 software. EMME/2 is an interactive transportation planning program that produces numerical and graphic representations of travel supply and demand.

The model has been structured to provide forecasting detail that adequately addresses the evaluation needs of both countywide and corridor-specific transportation strategies. To accomplish these objectives, the San Mateo Countywide Model was developed to rely on a zone structure detailed enough to depict changes in land use and demographic characteristics that would affect travel demand on state highways and intracounty transit systems, and highway and transit networks detailed enough for the analysis of those types of travel demand.

A representation of land use and demographic characteristics of the entire nine-county Bay Area also allows the travel model to produce travel demand forecasts that incorporate influences of regional travel demand on transportation facilities in San Mateo County.

Traffic Analysis Zone System

The traffic analysis zone (TAZ) structure developed for the San Mateo Countywide Travel Demand Forecasting Model is a refinement of the 1099-zone structure used by MTC for their nine-county regional travel model. TAZs are small geographical subdivisions of a region. Forecasts of socioeconomic variables, such as households and employment, are collected at the TAZ level for use by the travel demand models.

The San Mateo Countywide Travel Demand Forecasting Model required disaggregating or splitting the MTC zones within San Mateo County into more and smaller TAZs. The San Mateo County TAZs nest precisely within the larger MTC zones. This facilitates the disaggregation of projections of travel (person trip tables) created using MTC's zone structure to the traffic zones, and allows direct comparisons between the San Mateo Countywide Model's outputs and those from the MTC model.

Internal San Mateo County Zones

Within San Mateo County, MTC's 1099-zone system was refined to better suit the more detailed model network of the San Mateo Countywide model. As a result of this zone refinement effort, the 70 MTC zones in San Mateo County were increased to 326 TAZs.

External Zones

Outside of San Mateo County, the level of detail decreased as the distance from San Mateo County increased. The MTC 1099-zone structure was used for areas directly adjacent to San Mateo County, except for specific study areas where a greater level of detail was desired. MTC's superdistricts (of which there are 34 in the entire region) were used for the remaining areas of the region. A total of 679 external TAZs were developed.

Highway and Transit Networks

Networks are representations of transportation systems. For the purpose of model validation and calibration, a network describing the characteristics of transportation systems in 2000 was created. That network consists of highway, transit, and auxiliary transit (walk- and park-and-ride access connectors) elements.

As with the TAZ development process, the San Mateo County highway and transit networks were derived from the MTC regional networks. Within San Mateo County, the roadway network's level of detail was increased to include intracounty arterials not included in the

regional network. These roadways were added to ensure that every TAZ is accessible to the network, that principal travel routes exist in their entirety, and to maintain the continuity of bus routes that were coded over the roadway network.

The level of detail for the transportation network represented outside San Mateo County decreases with distance away from the county. For counties directly adjacent to San Mateo an arterial network was maintained, while for counties further away only regional facilities (usually freeways) were kept in the network. Regional transit facilities, such as express bus routes and rail transit, such as BART and CalTrain are also coded into the networks to allow for the estimation of inter-county and intracounty transit travel.

Model Components

The model produces the following countywide travel information:

« Trip generation (these are forecasts of the number of trips produced by and attracted to each TAZ)

« Trip distribution (these are distributions of trips simulated between each pair of TAZs, by trip purpose)

« Modal choice for interzonal trips (these are the forecasts of trips by mode—drive-alone auto, shared-ride auto, and transit—made between TAZs)

« Highway assignment (forecasts of trips made on the roadway networks being modeled)

« Transit assignment (forecasts of trips made on the transit networks being modeled)

(It should be noted that the model developed for San Mateo County contains the capability to create forecasts of university and high school and air passenger trips.)

Model Updates

MTC recently completed work on its BAYCAST model. C/CAG has completed a major overhaul of the countywide model so that it will continue to be consistent with the regional model. The update includes ABAG Projections 2000 as the basis for land use assumptions. A copy of the Checklist for Modeling Consistency is included as Appendix I.

CHAPTER 10
Monitoring and Updating the CMP

There are several elements of the Congestion Management Program (CMP) that must be monitored. Changes in travel patterns, increases in employment or population, and increases or modifications to the supply of transportation facilities or services could result in changes being made or needing to be made to the following CMP elements:

Traffic Level of Service Standards
Trip Reduction and Travel Demand Element
Land Use Impact Analysis Program
Deficiency Plans.

The processes to be applied to monitor each of these elements are described in this chapter. A jurisdiction may be found in nonconformance with the CMP if these processes are not adhered to.

The Congestion Management Program (document) will be updated every two years. Some of the issues to be addressed in future updates are also discussed in this chapter.

Discussion

The CMP legislation requires that all elements of the CMP be monitored on at least a biennial[1] basis by the designated Congestion Management Agency. The specific language regarding monitoring states that:[2]

> The agency shall monitor the implementation of all elements of the congestion management program. The agency shall determine if the county and cities are conforming to the congestion management program, including, but not limited to, all of the following:

[1]According to AB 1963.

[2]California Government Code Section 65089.3 (a).

(1) Consistency with levels of service and performance standards, except as provided in subdivisions (b)[3] and (c).[4]

(2) Adoption and implementation of a trip reduction and travel demand ordinance and program.

(3) Adoption and implementation of a program to analyze the impact of land use decisions, including the costs associated with mitigating these impacts.

The monitoring program will be used by the City/County Association of Governments of San Mateo County (C/CAG) to determine conformance with San Mateo County's CMP. If a local jurisdiction were not in conformance with the standards and requirements of the CMP, then C/CAG would make a finding of nonconformance. The CMP legislation describes the process for determining nonconformance as follows:[5]

(a) If, pursuant to the monitoring provided for in Section 65089.3, the agency determines, following a noticed public hearing, that a city or county is not conforming with the requirements of the congestion management program, the agency shall notify the city or county in writing of the specific areas of nonconformance. If, within 90 days of receipt of the written notice of nonconformance, the city or county has not come into conformance with the congestion management program, the governing body of the agency shall make a finding of nonconformance and shall submit the finding to the commission and to the Controller.

(b) Upon receiving notice from the agency of nonconformance, the Controller shall withhold apportionment of funds required to be apportioned to that nonconforming city or county

[3]Subdivision (b) exempts CMP Roadway System segments or intersections for which the CMA (C/CAG) has approved a Deficiency Plan from having to comply with the CMP's Traffic LOS Standards. For more information on Deficiency Plans, see Chapter 7.

[4]Subdivision (c) exempts certain types of traffic and situations from the Traffic LOS Standards (e.g., interregional traffic, construction and maintenance projects, freeway ramp metering, traffic signal coordination, traffic generated by low-income housing, traffic generated by high-density residential development, and mixed-use development near rail passenger stations).

[5]California Government Code Section 65089.5, subsections (a) and (b).

by Section 2105 of the Streets and Highways Code, until the Controller is notified by the agency that the city or county is in conformance.

As stated above, once a finding of nonconformance is made by C/CAG, the local jurisdiction would not receive its funds from the additional gas tax (enacted by California Proposition 111) or (the Federal) Transportation Equity Act for the 21st Century (TEA-21) until such time as the jurisdiction is again found to be in conformance. If the city or county does not come into conformance with the CMP's standards or requirements within a 12-month period, its gas tax allocations are forfeited irrevocably.

Monitoring the CMP

The processes to be followed to monitor each element of the CMP will require that local jurisdictions (cities and the County), and C/CAG provide information at predetermined times. Descriptions of the actions to be taken by each entity are described in the following paragraphs. The overall schedule is presented in Table 10-1.

Traffic Level of Service Standards Monitoring Process

The adopted Traffic Level of Service (LOS) Standards are presented in Chapter 3. The monitoring process will identify if there are any locations on the CMP Roadway System (see Chapter 2) that do not meet their LOS standard. Deficiency plans will then need to be prepared for these locations. As noted in Chapter 7, a total of nine deficient segments have already been identified through previous monitoring efforts. These deficiencies and any additional LOS deficiencies will be addressed through the Countywide Deficiency Plan.

At this time C/CAG is responsible for all traffic level of service monitoring activities. Traffic counts and LOS calculations will be conducted for the CMP roadway segments and designated intersections at least every two years. Segments or intersections already operating at LOS F will not be monitored unless there has been a change in operating conditions of nearby intersections or roadway segments or if monitoring is required because there has been a change in the transportation system, or demographic or economic conditions affecting travel behavior and magnitudes.9

The LOS calculations will be conducted both with and without the allowable traffic exemptions (see Appendix B for the traffic LOS calculation methods). The results will be presented in the form of a written report that will be submitted to C/CAG by May 31 of each monitoring year. This process will allow C/CAG to notify local jurisdictions of possible violations of traffic LOS standards with sufficient time for them to prepare deficiency plans.

Trip Reduction and Travel Demand Management Monitoring Process

This element of the CMP is described in Chapter 5. The primary requirements of the legislation specifying the preparation of CMPs are that the CMP include a program that promotes alternative transportation methods.

Table 10-1
CMP Monitoring Program

Element	Responsible Party	Jan.	Feb.	Mar.	Apr.	My .	Jun .	July .	Aug.	Sep.	Oct .	Nov.	Dec.
Traffic LOS Standards													
Conduct Counts	C/CAG												
Prepare LOS Calculations and Report	C/CAG												
Report Results Identifying Deficient Locations	C/CAG												
Notify Local Jurisdictions Needing Deficiency Plans	C/CAG												
Trip Reduction and Travel Demand Management													
Contact BAAQMD	C/CAG												
Land Use Impact Analysis Program (LUIAP)													
Local Jurisdictions provide documentation of compliance	Local Jurisdictions												
Deficiency Plans													
Provide C/CAG With Certification of Deficiency Plan Implementation	Local Jurisdictions												
Findings of Nonconformance/Noncompliance													
Hold Public Hearing on Nonconformance	C/CAG												
Provide Written Notice to Local Jurisdictions	C/CAG												
Local Jurisdictions Make Changes to Gain Compliance (90 Days)	Local Jurisdictions												
Submit Finding of Noncompliance to CTC and State Controller	C/CAG												

Land Use Impact Analysis Program Monitoring Process

The implementation procedures for the Land Use Impact Analysis Program have been in place for approximately one year.

This section is under further development.

Deficiency Plan Monitoring Process

C/CAG must also monitor deficiency plans to establish:

1. Whether they are being implemented according to the schedule described in their specific action plans, and

2. Whether changes have occurred which require modifications of the original deficiency plan or schedule.

The deficiency plan monitoring process is described in Chapter 7. Local jurisdictions will submit a report to C/CAG certifying whether or not the deficiency plans for which they are responsible are being implemented. The reports are due to C/CAG 12 months after notification of the deficiency. Failure by a local jurisdiction to submit the report may be interpreted by C/CAG that the plan(s) is (are) *not* being implemented. This finding by C/CAG could result in issuing a notification of nonconformance with the CMP to the State.

Findings of Nonconformance

During the monitoring process, C/CAG may determine that a local jurisdiction (a city or the County) is not conforming with the requirements of the CMP. C/CAG can reach this conclusion only after holding a noticed public hearing. C/CAG will notify the local jurisdiction(s), in writing, of the areas of nonconformance. The affected local jurisdiction(s) will then have 90 days after receipt of the written notice of nonconformance to gain compliance. If they are not able to do so, C/CAG will make a finding of noncompliance and will submit that finding to the California Transportation Commission and to the State Controller. Upon receipt of the finding, the State Controller will withhold the apportioned Proposition 111 fuel tax subventions and TEA-21 funds to the nonconforming local jurisdiction(s) until the Controller is notified by C/CAG that the jurisdictions are in conformance with the CMP.

(This page is intentionally blank)

Appendices

Appendix A

Detailed Inventory of CMP Roadways and Intersections

The following pages describe the functional classifications and numbers of lanes of the California State Highways within San Mateo County and the other roadways and intersections included in the 1997 CMP Roadway System. The information described here was collected by conducting field surveys and recording data. The numbers of lanes and roadway types are described for the following State Highways:

SR 1	Between the county lines of Santa Cruz and San Francisco Counties;
SR 35	Between the San Francisco and Santa Clara County lines;
SR 82	Between the county lines of Santa Clara and San Francisco Counties;
SR 84	From SR 1 to the Alameda County line;
SR 92	From SR 1 to the Alameda County line;
U.S. 101	Between the county lines of Santa Clara and San Francisco Counties;
SR 109	From Kavanaugh Drive to SR 84;
SR 114	From U.S. 101 to Bayfront Expressway (SR 84);
I-280	Between the county lines of Santa Clara and San Francisco Counties; and
I-380	Between I-280 and North Access Road (east of U.S. 101).

The numbers of lanes and classifications of the other roadways and the lane configurations and signal phasings of the intersections included in the CMP network were also determined. This information was obtained from the cities in which the facilities are located and from field surveys.

SR 1

From the Santa Cruz County line north to Linda Mar Boulevard, SR 1 is a two-lane conventional highway. Between Linda Mar Boulevard and Westport Drive (just south of Sharp Park Road), SR 1 is a four-lane highway. North of Westport Drive, SR 1 is a four-lane freeway until it reaches its junction with SR 35, where it becomes a six-lane freeway. At its junction with I-280, SR 1 joins I-280 to travel north until John Daly Boulevard. SR 1 then continues northward, as a six-lane freeway, across the San Francisco County line.

SR 35

North of I-280 (near Crestmoor Drive in San Bruno), SR 35 is a two- to four-lane arterial and four-lane expressway which extends northward across the San Francisco County line. The variations in the numbers of lanes and roadway types are described briefly below.

- SR 35 is a four-lane expressway from the I-280 interchange north becoming a two-lane arterial south of San Bruno Avenue.
- SR 35 is a two-lane arterial to the signalized intersection of Sneath Lane, then a four-lane arterial north of Sneath Lane to Sharp Park Road, and a two-lane arterial north of Sharp Park Road to Hickey Boulevard.
- North of Hickey Boulevard, SR 35 becomes a four-lane arterial, and then a four-lane freeway as it passes through the SR 1 interchange.
- Approximately one mile north of the SR 1 interchange, SR 35 becomes a four-lane expressway, and continues as such into San Francisco County.

South of Bunker Hill Drive, SR 35 becomes a two-lane rural road. After a short section where SR 92 and SR 35 share the same roadway, SR 35 becomes Skyline Boulevard south to Santa Clara County.

SR 82 (El Camino Real/Mission Street)

SR 82 is a four- to six-lane arterial which extends north from the Santa Clara County line across the San Francisco County line. The following street segments are ***not* six lanes** wide:

Roble Avenue to Glenwood Avenue	Four lanes
SR 84 overpass to Whipple Avenue	Four lanes
Whipple Avenue to F Street (in San Mateo)	Two lanes northbound, and three lanes southbound
F Street to 42nd Street	Four lanes
42nd Street to Hillsdale Boulevard	Two lanes northbound, and three lanes southbound
East Third Avenue to south of Trousdale Drive	Four lanes
Hickey Boulevard to Mission Road	Four lanes
Westlake Avenue to John Daly Boulevard	Four lanes

SR 84

SR 84 (Woodside Road) is a four-lane arterial between I-280 and SR 82 (except for a short segment between San Carlos Avenue and Santa Clara Avenue which is six-lanes wide). SR 84 is a four-lane expressway between SR 82 and Bay Road. East of Bay Road to U.S. 101, SR 84 is a six-lane expressway. At its junction with U.S. 101, SR 84 joins U.S. 101 to travel south until the Marsh Road exit, where SR 84 follows the Bayfront Expressway to the Dumbarton Bridge. The Bayfront Expressway is six-lane wide from Marsh Road to east of University Avenue.

SR 84 is a two-lane conventional highway from west of I-280 to SR 1. (Note: Signs on U.S. 101 still indicate Willow Road (SR 114) to be SR 84.)

SR 92

SR 92 is a four-lane freeway between I-280 and U.S. 101. SR 92 is a six-lane freeway between U.S. 101 and the Alameda County Line, across the San Mateo Bridge. West of I-280 to SR 1, SR 92 is a two-lane conventional highway.

U.S. 101

U.S. 101 is an eight- to ten-lane freeway in San Mateo County. The lane changes for this north/south facility are as follows:

- U.S. 101 is an eight-lane freeway from the Santa Clara County line to the Whipple Avenue interchange comprising six mixed-flow lanes and two High Occupancy Vehicle (HOV) lanes.

- U.S. 101 is an eight-lane freeway from the Whipple Avenue interchange to the San Francisco County line, with the following two exceptions:

1. Between Ralston Ave and Hillsdale Blvd, an auxiliary lane has been added in each direction.

2. Northbound U.S. 101 is six lanes wide between the SR 92 and Kehoe Avenue off-ramps, and five lanes wide between the Kehoe Avenue and Third Avenue off-ramps. Southbound U.S. 101 remains four lanes wide.

3. U.S. 101 is a ten-lane freeway from north of the Millbrae Avenue interchange ramps to south of the I-380 interchange ramps.

SR 109

University Avenue has been designated as SR 109 between SR 84 and Kavanaugh Drive. SR 109 is a four-lane arterial.

SR 114

Willow Road, which has been designated as SR 114 between U.S. 101 and Bayfront Expressway, is a four-lane arterial.

I-280

I-280 is a 6- to 12-lane freeway in San Mateo County. The variations in the number of lanes on this north/south facility are described below.

« I-280 is an eight-lane freeway from the Santa Clara County line north to the I-280/SR 1 interchange in Daly City, with the following exceptions:

1. Between Edgewood Road and the interchange with SR 92, I-280 contains five northbound and five southbound lanes. Each five-lane segment is approximately two miles long and signed: “Slow Vehicles Keep Right.”

2. Through the I-380 interchange, northbound I-280 has only three lanes, while southbound I-280 widens to include a fifth, auxiliary lane.

* I-280 is a 12-lane freeway, north of the SR 1 interchange (south) to the SR 1 interchange (north).

* I-280 is a six-lane freeway, north of its northern junction with SR 1 to the San Francisco County line, where the freeway widens to eight lanes.

I-380

I-380 is an east/west freeway which connects I-280 and U.S. 101, and extends east of U.S. 101 to provide access to the San Francisco International Airport. Between I-280 and U.S. 101, I-380 is four lanes wide in the westbound direction and three lanes wide in the eastbound direction. East of U.S. 101, I-380 is a freeway ramp, narrowing down to two lanes in each direction and terminating at North Access Road (by United Airlines Maintenance Facility.)

Other CMP Roadways

The CMP roadway system also includes three roadways which are not state highways. These arterials, all located in Daly City, are described briefly below:

- Mission Street is a four-lane arterial that extends from SR 82 (San Jose Avenue) to the northeast, across the San Francisco County line.

- Bayshore Boulevard is an arterial that extends southward from its junction with U.S. 101 in San Francisco County through Brisbane, where it becomes Airport Boulevard. The CMP network only includes the segment of Bayshore Boulevard between the San Francisco County line and Geneva Avenue. This segment is three lanes wide in the northbound direction and two lanes wide in the southbound direction.

- Geneva Avenue is a four-lane arterial that extends to the northwest from Bayshore Boulevard across the San Francisco County line to Mission Street.

CMP Intersections

The CMP roadway system also includes 16 intersections. These were not included in the 1991 CMP and were added for the 1993 CMP. The 16 intersections are:

Geneva Avenue and Bayshore Boulevard
SR 35 (Skyline Boulevard) and John Daly Boulevard
SR 82 (Mission Street) and John Daly Boulevard/Hillside Boulevard
SR 82 (El Camino Real) and San Bruno Avenue
SR 82 (El Camino Real) and Millbrae Avenue
SR 82 (El Camino Real) and Broadway
SR 82 (El Camino Real) and Peninsula Avenue
SR 82 (El Camino Real) and Ralston Avenue
SR 82 (El Camino Real) and Holly Street
SR 82 (El Camino Real) and Whipple Avenue
SR 84 (Bayfront Expressway) and SR 109 (University Avenue)
SR 84 (Bayfront Expressway) and SR 114 (Willow Road)
SR 84 (Bayfront Expressway) and Marsh Road
SR 84 (Woodside Road) and Middlefield Road
SR 92 and SR 1
SR 92 and Main Street.

Appendix B

Traffic Level of Service Calculation Methods

Level of service (LOS) is a term used to qualitatively describe the operating conditions of a roadway based on factors such as speed, travel time, maneuverability, delay, and safety. The level of service of a facility is designated with a letter, A to F, with A representing the best operating conditions and F the worst.

There are many methods available to calculate the levels of service for the various types of roadways and intersections that comprise San Mateo County's designated system for the 1997 Congestion Management Program (CMP). The components of the 1997 CMP Roadway System include freeways, such as U.S. 101 and I-280; multilane highways; two-lane highways, such as State Route 1 (SR 1), south of Linda Mar; major arterials, such as SR 82 (El Camino Real); and major intersections. Operational analyses of specific weaving sections and ramp junctions have not been included in the 1995 CMP but may be added for subsequent CMPs.

AB 471 and AB 1963, the CMP legislation, require that methods of calculating levels of service defined either by the latest version of the *Highway Capacity Manual* (HCM) or by the Transportation Research Board's *Circular 212* be used for the analysis of CMP roadways. The latest update to the HCM published in 1994 specifies level of service methods for freeways, multilane highways, two-lane highways, arterials, freeway weaving sections, ramp junctions, signalized intersections, and unsignalized intersections. The TRB's *Circular 212* describes methods for signalized and unsignalized intersections.

The level of service (LOS) calculation methods found in the 1994 HCM for freeways, multilane highways, two-lane highways, and arterials and the calculation for signalized intersections based on TRB's *Circular 212* method are described in this appendix.

Level of Service Calculation Methods

The methods selected to calculate levels of service for the roadway (freeway, multilane highway, two-lane highway, and arterial) segments and intersections included in the CMP network are described below:

Freeways

A freeway is defined as a divided highway facility with two or more lanes in each direction and full control of access and egress. It has no intersections; access and egress are provided by ramps at interchanges.

According to the latest version of the *Highway Capacity Manual* (1994 HCM), the LOS of freeway segments is based on the density of vehicles, expressed in passenger cars per mile per lane. The LOS can also be evaluated with volume-to-capacity (V/C) ratios, average travel

speeds, and maximum service flow rates. The specific LOS criteria for freeways are presented in Table B-1. Illustrations of the various levels of service are presented on Figure B-1.

The selected LOS method for freeway segments is based on calculating V/C ratios for each direction of travel, wherein the traffic volume for each segment is divided by the capacity of the segment. The volumes are obtained from counts for existing conditions or from a travel forecasting model for future conditions. The capacity is estimated as the number of lanes multiplied by 2,200 vehicles per hour per lane four four-lane freeway segments and 2,300 vehicles per hour per lane for segments with six or more lanes. The V/C ratios are calculated and related to LOS based on the relationships presented in Table B-1.

Another method of calculating a freeway segment's level of service is to determine the average travel speed from floating car runs. Descriptions of the average travel speeds for each LOS designation are also presented in Table B-1.

Multilane Highways

Multilane highways generally have posted speed limits of between 40 and 55 miles per hour (mph). They usually have four or six lanes, often with physical medians or two-way left-turn lane medians, although they may also be undivided (have no median). Unlike freeways, multilane highways are interrupted by intersections or driveways.

The level of service criteria for multilane highways are similar to the criteria for freeways. The specific criteria from the HCM are presented in Table B-2. The LOS calculation method is identical to the calculation method for freeways. The only difference is the range of V/Cs and speeds for each LOS designation. The maximum ideal lane capacity for a multilane highway segment is 2,200 vehicles per hour.

Two-Lane Highways

A two-lane highway is defined as a two-lane roadway with one lane for use by traffic in each direction. Passing of slower vehicles requires use of the opposing lane. As volumes or geometric constraints increase, the ability to pass decreases and platoons of vehicles are formed. The delay experienced by motorists also increases. The LOS for two-lane highways is based on mobility. The specific LOS criteria from the 1994 HCM are presented in Table B-3.

For two-lane highways, the selected method, based on V/Cs, takes into account the volume in both directions. The total volume is divided by the total capacity of 2,800 vehicles per hour. The corresponding V/C is correlated to a LOS based on the V/C ranges in Table B-3. Average travel speeds for each LOS designation are also presented in this table.

Table B-1

1994 HCM Level of Service Criteria for Basic Freeway Sections

	70 mph Free-Flow Speed				65 mph Free-Flow Speed				60 mph Free-Flow Speed			
LOS	Density[a] (pc/mi/ln)	Speed[b] (mph)	Maximum[c] V/C	MSF[d] (pcphpl)	Density[a] (pc/mi/ln)	Speed[b] (mph)	Maximum[c] V/C	MSF[d] (pcphpl)	Density[a] (pc/mi/ln)	Speed[b] (mph)	Maximum[c] V/C	MSF[d] (pcphpl)
A	≤ 10.0	≥ 70.0	0.318/0.304	700	≤ 10.0	≥ 65.0	0.295/0.283	650	≤ 10.0	60.0	0.272/0.261	600
B	≤ 16.0	≥ 70.0	0.509/0.487	1,120	≤ 16.0	≥ 65.0	0.473/0.457	1,040	≤ 16.0	60.0	0.436/0.412	960
C	≤ 24.0	≥ 68.5	0.747/0.715	1,644	≤ 24.0	≥ 64.5	0.704/0.673	1,548	≤ 24.0	60.0	0.655/0.626	1,440
D	≤ 32.0	≥ 63.0	0.916/0.876	2,015	≤ 32.0	≥ 61.0	0.887/0.849	1,952	≤ 32.0	57.0	0.829/0.793	1,824
E	≤ 36.7/39.7	≥ 60.0/58.0	1.000	2,200/2,300	≤ 39.3/43.4	≥ 56.0/53.0	1.000	2,200/2,300	≤ 41.5/46.0	53.0/50.0	1.000	2,200/2,300
F	Variable	Variable	Variable	Variable	Variable	Variable	Variable	Variable	Variable	Variable	Variable	Variable

[a] Density in passenger cars per mile per lane.
[b] Average travel speed in miles per hour.
[c] Maximum volume-to-capacity ratio.
[d] Maximum service flow rate under ideal conditions in passenger cars per hour per lane.

≤ less than or equal to
≥ greater than or equal to

Note: In table entries with split values, the first value is for four-lane freeways, and the second is for six- and eight-lane freeways.

Source: Transportation Research Board, *Highway Capacity Manual, Special Report 209* (Washington, D.C., 1994), pp. 3-9.

Table B-2

Level of Service Criteria for Multilane Highways

	60 mph Free-Flow Speed				55 mph Free-Flow Speed				50 mph Free-Flow Speed			
LOS	Density[a] (pc/mi/ln)	Speed[b] (mph)	Maximum[c] V/C	MSF[d] (pcphpl)	Density[a] (pc/mi/ln)	Speed[b] (mph)	Maximum[c] V/C	MSF[d] (pcphpl)	Density[a] (pc/mi/ln)	Speed[b] (mph)	Maximum[c] V/C	MSF[d] (pcphpl)
A	≤ 12	≥ 60	0.33	720	≤ 12	≥ 55	0.31	660	≤ 12	≥ 50	0.30	600
B	≤ 20	≥ 60	0.55	1,200	≤ 20	≥ 55	0.52	1,100	≤ 20	≥ 50	0.50	1,000
C	≤ 28	≥ 59	0.75	1,650	≤ 28	≥ 54	0.72	1,510	≤ 28	≥ 50	0.70	1,400
D	≤ 34	≥ 51	0.89	1,940	≤ 34	≥ 53	0.86	1,800	≤ 34	≥ 49	0.84	1,670
E	≤ 40	≥ 55	1.00	2,200	≤ 41	≥ 51	1.00	2,100	≤ 43	≥ 47	1.00	2,000
F	> 40[e]	< 55[e]	-[e]	-[e]	> 41[e]	< 51[e]	-[e]	-[e]	> 43[e]	< 47[d]	-[e]	-[e]

[a] Density in passenger cars per mile per lane.
[b] Average travel speed in miles per hour.
[c] Maximum volume-to-capacity ratio.
[d] Maximum service flow rate under ideal conditions in passenger cars per hour per lane.
[e] Highly variable, unstable.

≤ less than or equal to
≥ greater than or equal to

Source: Transportation Research Board, *Highway Capacity Manual*, Special Report 209 (Washington, D.C., 1994), pp. 7-8.

Table B-3

Level of Service Criteria for General Two-Lane Highway Segments

		V/C Ratio[a]																		
		Level Terrain							Rolling Terrain							Mountainous Terrain						
			% No-Passing Zone							% No-Passing Zone							% No-Passing Zone					
LOS	% Time Delay	Avg.[b] Speed	0	20	40	60	80	100	Avg.[b] Speed	0	20	40	60	80	100	Avg.[b] Speed	0	20	40	60	80	100
A	≤ 30	≥ 58	0.15	0.12	0.09	0.07	0.05	0.04	≥ 57	0.15	0.10	0.07	0.05	0.04	0.03	≥ 56	0.14	0.09	0.07	0.04	0.02	0.01
B	≤ 45	≥ 55	0.27	0.24	0.21	0.19	0.17	0.16	≥ 54	0.26	0.23	0.19	0.17	0.15	0.13	≥ 54	0.25	0.20	0.16	0.13	0.12	0.10
C	≤ 60	≥ 52	0.43	0.39	0.36	0.34	0.33	0.32	≥ 51	0.42	0.39	0.35	0.32	0.30	0.28	≥ 49	0.39	0.33	0.28	0.23	0.20	0.16
D	≤ 75	≥ 50	0.64	0.62	0.60	0.59	0.58	0.57	≥ 49	0.62	0.57	0.52	0.48	0.46	0.43	≥ 45	0.58	0.50	0.45	0.40	0.37	0.33
E	> 75	≥ 45	1.00	1.00	1.00	1.00	1.00	1.00	≥ 40	0.97	0.94	0.92	0.91	0.90	0.90	≥ 35	0.91	0.87	0.84	0.82	0.80	0.78
F	100	< 45	--	--	--	--	--	--	< 40	--	--	--	--	--	--	< 35	--	--	--	--	--	--

[a] Ratio of flow rate to an ideal capacity of 2,800 passenger cars per hour in both directions.

[b] Average travel speed of all vehicles (in mph) for highways with design speed ≥ 60 mph; for highways with lower design speeds, reduce speed by 4 mph for each 10-mph reduction in design speed below 60 mph; assumes that speed is not restricted to lower values by regulation.

≤ less than or equal to

≥ greater than or equal to

Source: Transportation Research Board, *Highway Capacity Manual, Special Report 209* (Washington, D.C., 1994), pp. 8-5.

Arterials

Levels of service for arterials are dependent on the arterial class denoted as Type I, II, or III. Type I arterials are principal arterials with suburban design, 1 to 5 signals per mile, no parking, and free-flow speeds of 35 to 45 miles per hour (mph). Type III arterials have urban designs, with 6 to 12 signals per mile, parking permitted, and are undivided with free-flow speeds of 25 to 35 miles per hour. Type II arterials fall between Type I and III and have free-flow speeds of 30 to 35 miles per hour.

The LOS for an arterial is based on maneuverability, delays, and speeds. As the volume increases, the probability of stopping at an intersection due to a red signal indication increases and the LOS decreases. The specific LOS criteria from the HCM are presented in Table B-4.

For the CMP, a calculation method based on V/C was selected. Volumes on each roadway segment in each direction are divided by the capacity, estimated to be 1,100 vehicles per hour per lane. The capacity was estimated based on a saturation flow rate of 1,900 vehicles per lane and the assumption that El Camino Real would receive 60 percent of the green time.[1] With the assumption that streets perpendicular to El Camino Real would receive 40 percent of each intersection's green time, the reduction in El Camino Real's capacity due to intersecting streets has been accounted for in the method used to analyze levels of service of arterial streets. Except for the 16 designated intersections, the operations of individual intersections, which are the locations where a street capacity is most constrained, are not analyzed for the CMP. Therefore, the levels of service presented for various roadway segments along El Camino Real are likely to be better than the level of service of individual intersections.

The V/C for arterials is correlated to LOS based on the information in Table B-5. The average speeds for each LOS designation are presented in Table B-4.

[1]The estimated capacity for El Camino Real was calculated by multiplying 1,900 vehicles per hour per lane by 0.6, to arrive at 1,140 vehicles per hour per lane which was then rounded off to 1,100 vehicles per hour per lane.

Table B-4
Level of Service Criteria for Arterials

Arterial Class	I	II	III
Range of Free-Flow Speeds (mph)	45 to 35	35 to 30	35 to 25
Typical Free-Flow Speed (mph)	40 mph	33 mph	27 mph

Level of Service	Average Travel Speed (mph)		
A	≥ 35	≥ 30	≥ 25
B	≥ 28	≥ 24	≥ 19
C	≥ 22	≥ 18	≥ 13
D	≥ 17	≥ 14	≥ 9
E	≥ 13	≥ 10	≥ 7
F	< 13	< 10	< 7

mph miles per hour
≤ less than or equal to
≥ greater than or equal to

Source: Transportation Research Board, *Highway Capacity Manual, Special Report 209* (Washington, D.C., 1994), pp. 11-4.

Table B-5
CMP Level of Service Criteria for Arterials[a] Based on Volume-to-Capacity Ratios

Level of Service	Description	V/C[b]
A	Free-flow conditions with unimpeded maneuverability. Stopped delay at signalized intersection is minimal.	0.00 to 0.60
B	Reasonably unimpeded operations with slightly restricted maneuverability. Stopped delays are not bothersome.	0.61 to 0.70
C	Stable operations with somewhat more restrictions in making mid-block lane changes than LOS B. Motorists will experience appreciable tension while driving.	0.71 to 0.80
D	Approaching unstable operations where small increases in volume produce substantial increases in delay and decreases in speed.	0.81 to 0.90
E	Operations with significant intersection approach delays and low average speeds.	0.91 to 1.00
F	Operations with extremely low speeds caused by intersection congestion, high delay, and adverse signal progression.	Greater Than 1.00

[a] For arterials that are multilane divided or undivided with some parking, a signalized intersection density of four to eight per mile, and moderate roadside development.

[b] Volume-to-capacity ratio.

≥ greater than or equal to.

< less than.

Source: Transportation Research Board, *Highway Capacity Manual, Special Report 209* (Washington, D.C., 1994).

Signalized Intersections

The TRB *Circular 212* Planning method is the selected level of service calculation method for the designated intersections in the San Mateo County's CMP Roadway System. A signalized intersection's level of service, according to the method described in TRB *Circular 212,* is based on dividing the sum of the critical volumes by the intersection's capacity. This calculation yields the volume-to-capacity ratio (V/C). The critical movements are the combinations of through movements plus right-turn movements if there is no exclusive right-turn lane, and opposing left-turn movements that represent the highest per-lane volumes. Descriptions of levels of service for signalized intersections, together with their corresponding V/Cs, are presented in Table B-6.

Table B-6
Intersection Level of Service Definitions

Level of Service	Interpretation	V/C Ratio
A	Uncongested operations; all queues clear in a single signal cycle.	Less Than 0.60
B	Very light congestion; an occasional approach phase is fully utilized.	0.60 to 0.69
C	Light congestion; occasional backups on critical approaches.	0.70 to 0.79
D	Significant congestion on critical approaches, but intersection functional. Cars required to wait through more than one cycle during short peaks. No long-standing queues formed.	0.80 to 0.89
E	Severe congestion with some long-standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersections(s) upstream of critical approach(es).	0.90 to 0.99
F	Total breakdown, stop-and-go operation.	1.00 and Greater

In the TRB *Circular 212* method, the capacity of an intersection is based on an average saturation flow rate and percent lost time. The saturation flow rate is the maximum number of vehicles per lane that can pass a fixed point in one hour with 100 percent green time. The average saturation flow rate measured in San Mateo County is 1,980 vehicles per hour of green per lane (vphpgpl). The lost time is the time when vehicles are not entering the intersection due to changes in signal indications. Percent lost time is the lost time divided by the cycle length. The average percent lost time measured in San Mateo County for intersections with four or more phases is 12 percent. The intersection capacities, based on San Mateo County data, for signalized intersections with two, three, and four or more signal phases are presented in Table B-7. These capacities are used with the *Circular 212* Planning method to evaluate the levels of service for San Mateo County's CMP intersections.

Table B-7
Intersection Capacities

Number of Signal Phases	Capacity (in vph)
2	1,850
3	1,760
4 or more	1,700

Appendix C

BAAQMD's Deficiency List

Final

DEFICIENCY LIST:

PROGRAMS, ACTIONS AND IMPROVEMENTS

FOR INCLUSION IN CONGESTION MANAGEMENT PROGRAM

"DEFICIENCY PLANS"

Bay Area Air Quality Management District

Planning Division

939 Ellis Street

San Francisco, CA 94109

For more information, contact David Marshall at (415) 749-4678

Adopted by the District Board of Directors

November 4, 1992

BEFORE THE BOARD OF DIRECTORS
OF THE
BAY AREA AIR QUALITY MANAGEMENT DISTRICT

In the Matter of Adopting a Deficiency List for Use in Conjunction with County Congestion Management Programs)

RESOLUTION NO. 2119

WHEREAS, Section 65089 of the Government Code requires that a Congestion Management Program be developed and adopted for every county that includes an urbanized area;

WHEREAS, Deficiency Plans are a part of the Congestion Management Program process;

WHEREAS, Deficiency Plans must include a list of improvements, programs, or actions, and estimates of costs, that will measurably improve the level of service of the system and contribute to significant improvements in air quality;

WHEREAS, Section 65089.3 of the Government Code requires this District to establish and periodically revise a list of approved improvements, programs and actions which meet requirements included in the Section;

WHEREAS, District staff has prepared a proposed Deficiency List which comprises a list of programs, actions and improvements to be used by cities and counties in preparing Deficiency Plans, and a statement of policy the District will follow in updating the list and in considering items not included in the list but proposed for consideration in a Deficiency Plan;

WHEREAS, the proposed Deficiency List was discussed with affected and interested parties and was revised in response to comments received from such parties;

WHEREAS, District staff recommends that this Board adopt the Deficiency List attached hereto; and

WHEREAS, this Board concurs with the recommendation of the staff.

NOW, THEREFORE, BE IT RESOLVED that this Board hereby adopt the proposed Deficiency List attached hereto comprising a list of programs, actions and improvements for use in the preparation of Deficiency Plans and a statement of policy the District will follow in updating the list and in considering items not included in the list but proposed for consideration in a Deficiency Plan.

The foregoing resolution was duly and regularly introduced, passed and adopted at a regular meeting of the Board of Directo. of the Bay Area Air Quality Management District on the Motion of

///

///

///

///

///

///

///

///

///

///

Director McPeak, seconded by Director McKenna, on the 4th day of November 1992 by the following vote of the Board:

AYES: Aramburu, Battisti, Britt, Campbell, Harberson, Harper, Head , Hilligoss, McKenna, McPeak, Ogawa, Powers.

NOES: Hancock.

ABSENT: Achtenberg, Bruno, Cooper, Davis, Diridon, Eshoo, Fogarty.

M. Patricia Hilligoss

M. PATRICIA HILLIGOSS
Vice-Chairperson of the Board of Directors

ATTEST:

PAUL BATTISTI
Secretary of the Board of Directors

BAY AREA AIR QUALITY MANAGEMENT DISTRICT · STATE OF CALIFORNIA

Certified as a True Copy

Clerk of the Boards

INTRODUCTION

This document contains the Bay Area Air Quality Management District's list of improvements, programs and actions for inclusion in Congestion Management Program Deficiency Plans. Deficiency Plans are a part of the Congestion Management Program (CMP) process. Under the CMP process, each urbanized county in California establishes a county wide road system consisting of all Interstates, state highways and major arterials, along with a Level of Service (LOS) standard.[1] When traffic conditions on a roadway segment or intersection falls below the LOS standard, the local jurisdiction is required to develop a Deficiency Plan. In some instances, cities and counties may be monitoring LOS based upon transportation models, attempting to predict conditions in the future. The intent is to develop plans for deficient segments prior to the actual occurrence of a deficiency.

The requirements for Deficiency Plans are set forth in Government Code Section 65089.3(b). The plans are to include four elements: A) an analysis of the cause of the deficiency; B) a list of improvements and their estimated costs which would enable the deficient road segment or intersection to maintain a LOS at the standard or better; C) a list of improvements, programs, or actions that will measurably improve the Level of Service of the road system and contribute to significant improvements in air quality; D) An action plan to implement either option B) or C) above, including a specific implementation schedule and a description of funding. The full text of Section 65089.3(b) is reprinted in Attachment 1.

The CMP statutes direct the Bay Area Air Quality Management District, as the air district for most of the nine-county Bay Area[2], to establish and periodically update a list of improvements, programs and actions which can be used by local governments in developing element C of the Deficiency Plans. The list should include items that " ... (i) measurably improve the level of service of the system ..., and (ii) contribute to significant improvements in air quality, such as improved public transit service and facilities, other rideshare programs and promotions, improved non-motorized transportation facilities, high occupancy vehicle facilities, and transportation control items." The statutes also state that "[i]f an improvement, program, or action is not on the approved list, it shall not be implemented unless approved by the local air quality management district."

---

1 Level of Service, commonly abbreviated as LOS, is a method of measurement of congestion that compares actual or projected traffic volume with the maximum capacity of the facility under study. LOS ranges from A to F, with F describing the most congested conditions. Except in a few instances, the standard established in the CMPs of the nine Bay Area counties is LOS E. Some counties have designated LOS D for facilities located within undeveloped and rural areas.

2 The Bay Area Air Quality Management District includes Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, the western part of Solano, and the southern part of Sonoma Counties.

Confusion has arisen over whether a city or county in its Deficiency Plan can recommend widening a "deficient" highway segment or expanding a "deficient" intersection to resolve a level of service deficiency. The CMP legislation provides for that option as noted in element B above. However, even when a jurisdiction knows in advance that it wants to opt for a "direct fix" to the problem, it still must prepare a Deficiency Plan because the segment has become deficient (determined through LOS monitoring). In that Deficiency Plan, the jurisdiction still must develop element C of the Plan that evaluates improvements, programs and actions contained on the BAAQMD's list.

The CMP process is largely directed at alleviating and avoiding peak-period roadway congestion. Because of this, the Deficiency List contains items intended to help reduce peak-period motor vehicle travel, although many items on the list will also work to reduce travel during other periods of the day. The Deficiency List does not contain certain "market-based" revenue and pricing measures (e.g., gas tax increase, higher bridge tolls, congestion pricing, smog fee, "pay as you drive" insurance, etc.). Each of these need (1) state enabling legislation prior to any city or county action to implement, and (2) a well-orchestrated regional implementation strategy to ensure success. For these reasons, the market-based measures are not appropriate for the Deficiency List at this time.[3]

In a region as large and diversified as the Bay Area, it would be difficult to identify improvements, programs and actions that individually work to "...measurably improve the level of service of the system...and contribute to significant improvements in air quality...". The items that have been included on our list work in some degree to improve roadway conditions and lessen air pollution. The degree to which each item does both varies: Some are very strong improvers of traffic congestion, but make small contributions in improvements to air quality; others help to improve air quality, but offer very little in the way of traffic relief; and then still others offer little in both categories, yet are very necessary as supporting measures.[4] Because of this, emphasis should be given to the benefits derived from combining the various measures, viewing their effectiveness in terms of joint application.

---

3 The Deficiency List does include Parking Management (measure E6) through pricing strategies.

4 Certain measures included on the District's list focus on providing alternatives to the single occupant vehicle that will benefit the Region's air quality in the long term. Implementation of these measures as part of a deficiency plan may contribute to or cause localized congestion for motor vehicles (examples include Signal Preemption by Transit Vehicles [B11] and Bus Stop Bulbs [B12]). Without changes to State law, a jurisdiction could have to prepare a Deficiency Plan to remedy a level of service deficiency caused by implementation of a measure (or measures) on this list.

The following measures have been included in this initial Deficiency List, but will undergo further evaluation due to revised air pollutant emissions factors recently released by the California Air Resources Board (CARB):

- Accelerated implementation of the *2005 HOV Master Plan* (D3)
- Auxiliary Lanes of up to One Mile in Length Where HOV Lanes are Provided (F3)
- Signalization Improvements (F4)
- Computerized Traffic and Transit Control/Management on Arterials (F5)

These new emissions factors show that vehicles emit more Carbon Monoxide and Hydrocarbons at speeds greater than 35 miles per hour. Following: (1) resolution of the current debate among CARB, the U.S. Environmental Protection Agency (EPA), Caltrans, the Federal Highway Administration (FHWA) and MTC on emissions factors for vehicle speeds of 20-50 miles per hour, or (2) more technical information becoming available, BAAQMD staff will reassess the appropriateness of these measures for the Deficiency List. Furthermore, Ramp Metering (F2) has the potential to create Carbon Monoxide "hot spots" since vehicles must idle while waiting to enter the freeway. Queues that develop at metered freeway entrances can cause motorists to opt to take short trips on local arterials, resulting in more emissions for the entire trip than would have occurred had the motorist waited in the queue to take the trip via freeway. When more technical information on the air quality impacts of ramp metering becomes available, BAAQMD staff will reassess the appropriateness of these measures for the Deficiency List.

The BAAQMD will reevaluate the measures on this list following preparation of revised regional transportation/air quality planning documents designed to replace current planning documents of the same name:

- Regional Transportation Plan (1993)
- Ozone State Implementation Plan (to be prepared for Federal air quality standards) (1993)
- Bay Area 1994 Clean Air Plan (to be prepared for State air quality standards)

Although the statutes do not call for guidance on the implementation of the items on the Deficiency List, BAAQMD staff has provided some. The guidance is general in nature, and is directed towards providing a basis by which local jurisdictions, Congestion Management Agencies and other interested groups can determine the adequacy of a Deficiency Plan. The guidance is not intended to serve as a "cookbook" that specifies the degree to which each item shall be implemented in a particular jurisdiction. Experience gained through the implementation of the items on the list should help District staff in

updating and improving the list. Future versions may contain actions specific to certain Counties or municipalities.

Section I is the District's draft list of programs, actions and improvements to be used by cities and counties in preparing Deficiency Plans. **California law *mandates* that cities and counties select measures from the list in Section I when preparing Deficiency Plans.**

Section II contains the *policy* the BAAQMD will follow in updating the list and for considering items not included on the list but proposed for inclusion in a Deficiency Plan.

Appendix A presents the BAAQMD's guidance on how the draft Deficiency List should be implemented by local governments. **Information in Appendix A is *advisory*. California law does not specify the scope or quantity of measures on the list necessary to mitigate or "offset" a level of service deficiency.**

This document was prepared by David Marshall and Michael Murphy, Senior Planners, Planning Division / Environmental Review Section.

SECTION I

LIST OF PROGRAMS, ACTIONS, AND IMPROVEMENTS FOR INCLUSION IN DEFICIENCY PLANS

Cities/Counties/CMAs' use is mandatory (required by California law)

The items that comprise the list of programs, actions and improvements that cities and counties can incorporate into Deficiency Plans are described below. Each description indicates whether the item is most suitable for local implementation, county wide or corridor level implementation.

Although the items have been grouped into six categories, many are complementary and their individual effectiveness will be increased if undertaken together. For instance, the success and advantages of High Occupancy Vehicle lanes will be enhanced if preferential treatment of buses, carpools and vanpools is designed into parking areas, local arterials and freeway on- and off-ramps.

Each category is preceded with a listing of the Transportation Control Measures (TCM) from the *'91 Clean Air Plan* that will be directly implemented or in some fashion be supported by the items on the list. The development and implementation of Deficiency Plans is not viewed as the main avenue for the implementation of the TCMs in the *'91 Clean Air Plan*. Clearly though, implementation of system-wide improvements through Deficiency Plans can only benefit the success of the strategies set forth in the TCMs.

A. BICYCLE AND PEDESTRIAN MEASURES

A1. Improved Roadway Bicycle Facilities and Bike Paths. Roadways could be improved to provide increased safety and convenience for bicyclists. Improvements include:

- widening shoulders or curb side pavement
- lane re-striping and/or removal of on-street parking to create a wider outside (right) lane for bicycles thus reducing bicycle and automobile conflicts
- installing, marking and/or modifying sensitivity of detection loops at intersections to trigger light changes and allow bicycles to clear the intersection
- completing and expanding Class I bike paths and Class II bicycle lanes that are in the circulation elements of general plans

Caltrans standards shall be followed in designing and constructing bicycle improvements. This measure is suitable for both local and system-wide implementation.

A2. Transit and Bicycle Integration. This measure is intended to increase the number of bus and train routes capable of transporting bicycle riders, as well as improving interconnection between the two modes. Communities in San Mateo, Santa Clara and San Francisco Counties could work with the CALTRAIN Joint Powers Board to allow bicycles on CALTRAIN and to assure peak period bicycle accommodation on the new California cars (when acquired). Communities within the BART service area could work with BART to better accommodate bicycles during commute periods through downtown Oakland and San Francisco, as well as shortening or eliminating the periods during which bicycles are barred from the BART system. An alternative could be to provide special peak-period BART runs in the commute direction that accommodate bicycles. Communities, working with relevant transit districts, could work to increase the number of bus routes and rail services allowing access to bicyclists, as well as providing increased numbers of bicycle lockers (for regular users) and racks that allow use of the U-Bar style locks (for occasional users) at transit transfer centers and other interconnection points. This measure should be implemented on a system-wide basis since most transit service is on a multi-city basis. Local governments that operate their own transit service should implement this measure locally.

A3. Bicycle Lockers and Racks at Park and Ride Lots. Park and ride lots accessible to bicycles should contain bicycle lockers (for regular users) and racks that allow use of the U-Bar style locks (for occasional users). Jurisdictions will have to include in their Deficiency Plans the initial number of storage spaces and criteria for installing additional spaces. Communities can also consider establishing "Bike and Ride" lots: areas along major transit routes designated for bicycle storage only, separate from automobile parking lots. This measure can be implemented on a local basis.

A4. Bicycle Facilities And Showers At Developments. As part of any new office/industrial/commercial/school/special generator and multi-family (four or more units) residential development generating more than 50 person trips per day, cities and counties could require the inclusion of bicycle storage facilities and, for office/industrial/commercial/school/special generator developments employing more than 100 employees, showering and changing rooms. Bicycle storage facilities include bicycle lockers and racks (must allow use of the U-Bar style locks) which are located close to the main entrances or inside of buildings. Existing sites should add bicycle storage facilities and, for developments/buildings/sites employing more than 100 employees, showering and changing rooms where feasible. This measure can be implemented on a local basis.

A5. Improved Pedestrian Facilities. It is the general practice for new development to include sidewalks and other pedestrian facilities. However, efforts can be made to improve and expand upon current requirements and practices to make walking a more integral part of the transportation system. City and county zoning ordinances and design standards should be revised as appropriate to ensure safe, convenient and direct pathways for pedestrians between their residences, shopping and recreational areas, and work sites. Other efforts include requiring, where appropriate, the provision of walkways in commercial and residential areas linking building entrances to street sidewalks and crossings, and linking building entrances to adjacent building entrances and activity centers. Communities can also require continuous and clearly marked pathways across parking lots between sidewalks and building entrances. A preferable approach is to locate entrances and building fronts along street sidewalks, with parking spaces at the sides and rears of buildings. This measure is suitable for local implementation. (See also Land Use Measures [E8].)

A6. Pedestrian Signals. To encourage more walk trips, pedestrian signals should be added on major arterials to enhance safety. This measure should be implemented locally.

A7. Lighting for Pedestrian Safety. Communities can require and install adequate lighting for sidewalks, bus stops, bicycle parking areas and vehicle parking lots to create conditions that are safe for pedestrians. There may be special hardware requirements that must be met for implementation of this measure in proximity to facilities sensitive to light pollution (e.g., Lick Observatory). This measure is suitable for local implementation.

B. TRANSIT (Includes bus, rail and ferry services)

B1. Improvement of Bus, Rail and Ferry Transit Services. This measure is directed at improving public and private transit service. Cities, counties and employers will need to (1) work with the relevant transit districts and private operators to identify appropriate routes for reducing headways, extending service, improving transfers, and coordinating project design and services to new development; and (2) contribute financially toward both capital and operating costs of service improvements. Emphasis should be placed on providing service that will reduce peak period automobile trips (e.g., express and commuter bus/rail/ferry service). Service expansion should be coordinated with the relevant Short Range Transit Plan(s) and also support local and regional trip reduction efforts. This measure should be implemented on a system-wide basis.

B2. Expansion of Rail Transit Service. This measure is directed at extending or expanding rail transit beyond the projects included in MTC's New Rail Starts Program

outlined in MTC Resolution 1876. Emphasis should be placed on expanding rail service to corridors not included in Resolution 1876 that will experience rapid growth in peak period automobile trips. Cities and counties will need to work with local, regional, state and federal transportation agencies to define projects and establish institutional arrangements to construct and operate the services, and fund operating costs. This measure can be implemented locally and on a system-wide basis, and should be considered in conjunction with Improvement of Bus, Rail and Ferry Transit Services (B1).

B3. Expansion of Ferry Services. Freeways, bridges and transit connections around and across San Francisco Bay are heavily congested. High speed ferry service offers an efficient and comfortable transportation alternative. New or enhanced service should focus on peak period travel when congestion is greatest. An example would be to provide high speed commuter ferry service between Vallejo and the San Francisco Ferry Terminal as a reliever of peak period congestion on I-80 in Contra Costa and Alameda counties. This measure should be implemented on a corridor or system-wide basis.

B4. Preferential Treatment for Buses and In-Street Light Rail Vehicles (LRVs). This measure includes strategies that give preference to buses and in-street light rail vehicles, including transit stops at building entrances, bus shelters, LRV platform boarding areas, direct HOV to HOV connecting lanes and ramps, exclusive bus/LRV lanes, bypass lanes at metered freeway ramps, including reserved lanes around any queues that may form on connecting streets or at congested off-ramps. These strategies should be a part of a coordinated regional and/or county HOV system, with individual communities assisting with changes that affect local streets or development review/approval. This measure can be implemented both locally and on a system-wide basis.

B5. Transit Information and Promotion. This measure is intended to work with the Transit and Bicycle Integration (A2), Stricter Travel Demand Management/Trip Reduction Ordinances (E1) and Public Education Programs (E2). Cities and counties can:

- advertise the availability of transit in their communities
- post transit schedules at bus stops
- enhance access to transit via non-motorized modes (e.g., bicycling and walking)
- provide for special accommodation of clean fuel/electric vehicles at rail and ferry stations (e.g., preferential parking and free electric outlets)

Cities and counties must coordinate their recommendations with relevant organizations such as local transit district(s), MTC, RIDES for Bay Area Commuters, Inc., Berkeley TRiP,

San Benito Rideshare, Santa Clara County's Commuter Network, Santa Cruz Share-a-Ride, Solano Commuter Information[1] and the BAAQMD for enhancements to existing programs or implementation of new programs. Promotional activities should be directed at all trips, including those for shopping, recreation, commuting and school. This measure can be implemented both locally and on a system-wide basis.

B6. Transit Pricing Strategies to Encourage Ridership and, where applicable, Reduce Transit Vehicle Crowding. Pricing incentives and alternative fare structures can encourage ridership and, where necessary, reduce transit vehicle crowding. These incentives and strategies include subsidy from alternative revenue sources to reduce fares, zonal fares, peak hour fares, elimination of discounts for elder citizens who travel at peak times and free or reduced cost transit on "Spare the Air" day.[2] Transit pricing changes should ideally be done in conjunction with service improvements. Communities can work with neighboring cities and transit agencies to identify and subsidize appropriate incentive programs. This measure, especially appropriate for cities or counties that operate their own transit system, should be implemented on a system-wide basis.

B7. Transit Fare Subsidy Programs. These programs generally are implemented at employment sites in the form of direct employer subsidy of employee transit fares, usually with some monthly or yearly ceiling. Where cities/counties require employers to subsidize transit fares to meet trip reduction requirements, such programs must also equally subsidize persons who use non-motorized modes (e.g., bicycle or walk). Other subsidy programs could be directed towards school, recreational and shopping trips. This program can be implemented locally for a city or county's own employees, or a city or county can include a transit fare subsidy requirement for employers in its local trip reduction ordinance, or a city or county can condition new development to include such programs as a part of the city or county's development approval process.

B8. Transit Centers. To assist current and potential riders in obtaining route information, schedules, and passes, cities and counties would establish (or provide funds for transit agencies to establish) transit centers. The centers can be patterned after Berkeley TRiP. Another option is a mobile, clean fueled/electric "commute store" that would visit activity

---

[1] San Benito County, Santa Cruz County and eastern Solano County are outside the BAAQMD's jurisdiction. Reference is made to services offered in these jurisdictions since they are considered within the commute shed of the greater Bay Area.

[2] Depending on how the strategies are constructed, they have potential to significantly impact operating revenue. Any proposal should fully evaluate the impact on operating revenue and identify replacement revenue to cover any potential loss to the transit operator(s). "Spare the Air" day occurs when the BAAQMD forecasts that atmospheric conditions on the following day are likely to result in an exceedance of the health based State ozone standard. Major employers and the media are notified to advise employees and the general public that activities contributing to ozone formation should be limited.

centers and employment sites to disseminate transit, ridesharing, and non-motorized travel information (e.g., maps of bike routes, bicycle commuter handbooks, and city walking guides). A second option is to install electronic kiosk centers, which are able to dispense tickets, route information, and in some cases, assist with ride matching operations. Another option is to franchise out the centers to mailbox services, photocopying centers, or other such establishments. Centers could also be established at community centers. Centers should be established at all major transit transfer points. This measure can be implemented both locally and on a system-wide basis.

B9. Improved and Expanded Timed Transfer Programs. Shortening the time passengers wait when transferring between buses, from bus to train or vice-versa, and between transit systems is an important improvement to transit service. Working with the relevant transit districts, cities and counties would need to identify the best locations for timed transfers and which routes would be best suited for schedule adjustments. Current plans to institute timed transfers should be considered for accelerated implementation. This measure should be implemented on a system-wide basis.

B10. Improved and Expanded Fare Coordination. Through the encouragement of MTC, BART and several Bay Area transit operators have developed a fare card that is used to debit fares on BART and also serve as a semi-monthly "flash pass" on major Bay Area bus systems. Each month more people purchase this card, demonstrating the public's desire for a simplified Bay Area transit fare structure. MTC is working diligently with transit operators to test and implement a "universal" fare card. Cities and counties can work in partnership with MTC, CMAs and relevant transit districts to develop and implement fare coordination agreements, and contribute financially to the necessary hardware, software, equipment maintenance and, where applicable, operator subsidies.

B11. Signal Preemption by Transit Vehicles. Transit vehicles could be equipped with preemption devices that hold or trigger a green light in order to avoid delays at intersections. Since implementation of this measure could be highly disruptive to traffic flow in an optimally timed, signalized corridor, and thus increase emissions, affected local governments should work closely with transit agencies to implement signal preemption only where most appropriate. This measure should be implemented on a system-wide or corridor basis.

B12. Bus Stop Bulbs. A strategy to improve passenger pickup and off-loading is to extend sidewalks across the parking lane to the first through traffic lane. Such an extension is called a bus stop bulb. With bus stop bulbs, buses are not delayed merging back into traffic after stops, and cars are prevented from blocking the stops, both of which improve bus travel time.[3]Some transit agencies prefer bus turn outs (which remove the

bus from the traffic stream for passenger loading to minimize delay to motorists and allow the bus to reenter the traffic stream only when an adequate gap in traffic becomes available), while others prefer neither bus turn outs nor bus bulbs. Cities or counties that want to implement Bus Stop Bulbs (B11) should work closely with their respective transit agency(ies). The District does not consider bus turn outs as an appropriate alternative to bus stop bulbs since turn outs favor single occupant vehicles and lengthen bus travel times. This measure can be implemented both locally and on a system-wide basis.

B13. School Bus Transit Service. This measure is directed at establishing school bus services in school districts where bus service has been reduced or eliminated. Reinstating or expanding school bus service would provide an alternative to many students who drive to school or are driven to school by others. Reinstating or expanding school bus service would also provide capacity on existing public bus services for commuters displaced by student riders. Cities and counties will need to work with school districts to establish arrangements for funding the service. This measure would be implemented locally or system-wide.

C. CARPOOLING, BUSPOOLING, VANPOOLING, TAXIPOOLING, JITNEYS, CASUAL CARPOOLING AND OTHER SHARED RIDES (Ridesharing)

C1. Preferential Treatment for Shared Ride Vehicles. This measure includes strategies that give preference to carpools, buspools, vanpools, taxipools, jitneys and other shared rides, including reserved parking spaces next to building entrances, transit stops at building entrances, direct HOV to HOV connecting lanes and ramps, bypass lanes at metered freeway ramps, including reserved lanes around any queues that may form on connecting streets or at congested off-ramps. These strategies should be a part of a coordinated regional and/or county HOV system, with individual communities assisting with changes that affect local streets or development review/approval. This measure can be implemented both locally or on a system-wide basis.

C2. Increased use of Commuter/Employer Services. To increase the number of carpools and vanpools, commuters and employers should be encouraged to use the free computerized ridematching services provided by RIDES for Bay Area Commuters, Inc., Berkeley TRiP, San Benito Rideshare, Santa Clara County's Commuter Network, Santa Cruz Share-a-Ride and Solano Commuter Information.[3] RIDES maintains a database that serves commuters in the nine Bay Area counties and several outlying counties. RIDES'

---

[3] San Benito County, Santa Cruz County and eastern Solano County are outside the BAAQMD's jurisdiction. Reference is made to services offered in these jurisdictions since they are considered within the commute shed of the greater Bay Area.

database is electronically linked to ridesharing programs in San Benito County, Santa Clara County, Santa Cruz County, Solano County and the City of Berkeley as well as to ridesharing programs of several Bay Area employers. As an integral part or cities' and counties' trip reduction efforts, employers of all sizes should encourage their employees to take advantage of these services. In addition, employer services offered by RIDES, Santa Clara County's Commuter Network, Solano Commuter Information and Berkeley TRiP could serve as an integral part of training, education and outreach efforts for employee transportation coordinators. This measure can be implemented locally or on a system-wide basis.

D. HIGH OCCUPANCY VEHICLE (HOV) FACILITIES

D1. Preferential Treatment for HOVs. See measures B4 and C1.

D2. Bus and Carpool/Buspool/Vanpool/Taxipool Priority Lanes on Local Arterials. This measure is aimed at providing time savings for buses and car/bus/van/taxipools on local arterials. Many peak period commute trips occur on congested local streets. Provision of the Priority lanes during the commute periods will act as an incentive for ridesharing. In some instances, this measure can be combined with Restrictions on Curb-Side Deliveries and On-Street Parking (F11) to provide lanes without taking away mixed flow capacity. (However, streets with existing or planned bicycle lanes should not have the parking lane converted, as this could cause conflicts between bicyclists and motor vehicles.) Cities and counties incorporating this measure in their Deficiency Plan should indicate how any proposed priority lanes will supplement or otherwise support any county-wide or regional HOV plans. This measure should be implemented on a system-wide basis.

D3. Accelerated Implementation of the *2005 HOV Master Plan*. The Metropolitan Transportation Commission (MTC), Caltrans, and the California Highway Patrol (CHP) have identified a regional system of High Occupancy Vehicle Lanes. Some of the projects have already been programmed for funding and completion by 1995. The remainder are assumed for completion by 2005. Communities can place a greater priority on these projects so that they can be constructed before the year 2005. For areas, such as Solano County, which are not included in the *2005 HOV Master Plan*, emphasis can be placed on developing HOV lanes identified in another study, such as the *I-80 Strategic Plan*. Cities and counties should work with MTC, Caltrans and the CHP to evaluate HOV lanes on freeway segments not included in the *2005 HOV Master Plan*.

The technical analysis accompanying the *2005 HOV Master Plan* indicated that successful HOV lanes require support facilities, such as park and ride lots, express bus service and exclusive HOV bypass lanes and connecting ramps. It is recommended that Deficiency

Plans incorporating this measure focus on providing support facilities for HOV lanes. Some, such as by-pass lanes and connecting ramps, would be constructed at the time the HOV lane is constructed. Others, such as park and ride lots and improved transit service should be implemented prior to the opening of the HOV facility. This measure can largely be implemented on a system-wide basis, although supporting actions can be done on a local basis. *(See note on page 3 regarding this measure.)*

D4. HOV to HOV Facilities. Local government work with Caltrans and CMAs to identify and program for construction ramps that provide a direct connection between HOV facilities. This could significantly reduce travel time for HOVs that otherwise would be required to negotiate a very slow merge across three or four lanes of single occupant vehicle (SOV) traffic twice in order to exit one freeway and enter another. This measure can be implemented on a system-wide basis.

D5. Direct HOV Lane Entrance/Exit Ramps to Arterials and Special Generators. Where high volumes of HOVs would benefit from direct access to freeway or expressway HOV lanes, direct HOV ramps should be provided for (1) arterials that provide access to major activity centers and (2) connecting roadways to special generators (e.g., airports, stadiums, universities, military facilities, etc.). This measure could be implemented region-wide or locally.

E. OTHER TCMS, RELATED MEASURES.

E1. Stricter Travel Demand Management/Trip Reduction Ordinance. As part of a Deficiency Plan, a city or county will modify their mandated Trip Reduction Ordinance to include requirements *beyond* those either currently identified or recommended in their county's CMP. After the adoption of the BAAQMD's Employer-Based Trip Reduction Rule, jurisdictions would revise their programs to go *beyond* the requirements embodied in the District's rule and other local trip reduction requirements, where applicable. This program can be implemented locally.

E2. Expanded Public Education Programs. A Public Education program should be an essential part of any Deficiency Plan. Jurisdictions can include educational materials regarding air quality and congestion relief and the use of the automobile with programs dealing with waste recycling, water conservation, etc. The conservation of air quality and the efficient use of the transportation system are messages compatible with other waste reduction and resource conservation programs. Public education programs might include the following topics:

- health effects of air pollution and traffic congestion
- the air pollution effects of older cars and cars that are out of tune
- list of available low emission vehicles (electric, natural gas, methanol, etc.) and their sellers
- the air pollution effects of cold starts and short trips
- the benefits of linking trips for shopping, errands, recreation, work, particularly during the afternoon on weekdays and during the weekend
- the role of alternative means of transportation in improved regional air quality, local congestion relief, and reduced energy use
- the benefits of compact development, particularly near transit stations
- the benefits of leaving the car at home at least one or two days a week
- the benefits of taking feeder buses, bicycling or walking to regional rail or bus transfer centers and other destinations
- advertising the location, cost and availability of discount transit tickets
- educational materials designed for use in school curricula

The BAAQMD has already begun a public education program for the region. Materials developed as part of the program will be available to cities and counties. RIDES for Bay Area Commuters, Inc., Berkeley TRiP, San Benito Rideshare, Santa Clara County's Commuter Network, Santa Cruz Dial-a-Ride, and Solano Commuter Information each provide a variety of public information and services available to cities, counties, CMAs, transit agencies, employers and other transportation agencies/organizations.[4] Educational materials should also be developed for planning and zoning commissions and governing boards that make land use and transportation decisions impacting air quality. This program can be implemented locally.

E3. Child Care Facilities at or close to Employment Sites, Transit Centers and Park and Ride Lots. Many commuters need to drop off and pickup their children at child care. The intent of this measure is for jurisdictions to facilitate the location of child care facilities at, or more likely, close to employment sites, major transit centers (e.g., BART, CalTrain and Santa Clara Light Rail stations, and park and ride lots. The intent is to shorten or eliminate the automobile portion of the commute trip. Jurisdictions and employers may need to provide financial incentives to operators of such facilities. This program can be implemented locally. (See also Land Use Measures [E8].)

---

[4] San Benito County, Santa Cruz County and eastern Solano County are outside the BAAQMD's jurisdiction. Reference is made to services offered in these jurisdictions since they are considered within the commute shed of the greater Bay Area.

E4. Retail Services at or close to Employment Sites, Transit Centers and Park and Ride Lots. Trips could be eliminated and perceived transit waiting time would be reduced if retail services (e.g., automated bank teller machines (ATMs), dry-cleaners, coffee shops, book stores, etc.) were offered in conjunction with employment sites, transit centers and park and ride lots. Jurisdictions could provide incentives for and work with transit operators to encourage development at or in immediate proximity to areas where people wait to take a bus or train. Activity at or near a transit center or park and ride lot would also enhance safety and thus increase patronage. (See also Land Use Measures [E8].)

E5. Telecommuting Centers and Work-at-Home Programs. Under this measure, jurisdictions and employers would facilitate through discussions with major employers:

- the creation of centers in their communities for telecommuting
- implementation of programs that allow employees to work at home

Businesses would rent space in the center for their employees to work, being connected by telephone wires to the main office and/or allow their employees where appropriate to work at home one or two (or more) days per week. This program can be implemented locally.

E6. Parking Management. This is a broad measure, overlapping with measures dealing with employer-based trip reduction and traffic flow improvements. Jurisdictions can implement parking charges, restrict parking during peak hours along busy corridors, require preferential parking for carpools and vanpools at major activity centers, require shared parking arrangements at developments, land bank parking space, establish automobile free zones, parking standards in zoning ordinances to discourage vehicle trips (e.g., establish maximum parking ratios rather than minimum ratios, revise minimum ratios to require fewer spaces, etc.). This program can be implemented locally.

E7. Parking "Cash-Out" Program/Travel Allowance. AB 2109 (Katz, Ch. 92-0554) requires employers of 50 persons or more who provide a parking subsidy[5] to employees to offer a parking cash-out program. Under a parking cash-out program, the employer offers to provide a cash allowance to an employee equivalent to the parking subsidy that the

5 "Parking subsidy" is defined as the difference between the out-of-pocket amount paid by an employer on a regular basis in order to secure the availability of an employee parking space and the price, if any, charged to an employee for use of that space.

employer would otherwise pay to provide the employee with a parking space.[6] Employees who wish to continue to drive will receive a parking space in lieu of the cash allowance. Employees who forego the use of parking can use the travel allowance for any purpose, including subsidizing the use of alternative transportation modes. Employers may also offer transit passes or ridesharing subsidies as all or part of the travel allowance to help reduce the tax impact on employees.[7]

As part of a deficiency plan, a city or county could pass an ordinance, amend its trip reduction ordinance, or work with employers to implement parking cash-out programs that go beyond this new State requirement.[8] Examples include:

- include employers with fewer than 50 employees
- include employers that own their own parking spaces, using the market rate for parking in the area as the cost of parking and the amount of the cash travel allowance
- require or encourage building owners to separate the cost of parking from the cost of leasing office space, thereby facilitating/requiring parking cash-out programs in multi-tenant office complexes
- implement a parking cash-out program at city/county employment sites as a model for other employers

This program, which should be implemented locally, must be designed to minimize any adverse impact on parking in neighborhoods adjacent to the participating employment sites.

E8. Land Use Measures. Land use exerts a strong influence on travel patterns and transportation mode choice. Site design strategies (e.g., clustering and minimizing walk distance to transit) also influence mode choice. Strategies which local governments can undertake include revising general plan policies and land use designations, zoning ordinances and design standards to provide for:

---

6 AB 2109 also requires cities and counties in which a commercial development will implement a parking cash-out program which is included in a CMP pursuant to subdivision (b) of Government Code Section 65089 or a deficiency plan pursuant to Government Code Section 65089.3 to grant that development an appropriate reduction in the parking requirements otherwise in effect for new commercial development.

7 Under State and Federal law a cash travel allowance is considered gross income and is therefore taxable. Transit subsidies and some other ridesharing subsidies are not taxable up to varying amounts, depending upon State or Federal tax law.

8 To meet the requirements of this Deficiency List, cities and counties must require that the employer program not be designed to disproportionately favor use of any alternative mode (e.g., giving a travel allowance to the employee in the form of a "Commute Check" that can be used for public transit only, and offering no equivalent monetary benefit for those who rideshare, bicycle or walk).

- phase development to occur near current transit service (i.e., infill)
- mixed land uses where residences, work places and services are located close enough together to minimize the need for private motorized transportation between them[9]
- pedestrian oriented design, such as sidewalks, adequate crosswalks on major streets, building entries near sidewalks rather than behind parking lots, and convenient transit stops
- affordable housing near major employment sites
- incentives for infill development
- higher densities at transit stops and along major transit lines
- sites for alternative fuel vehicle fueling facilities

This measure can be implemented both locally and on a system-wide basis. (See also Improved Pedestrian Facilities [A5], Child Care Facilities at or close to Employment Sites, Transit Centers and Park and Ride Lots [D3] and Retail Services at or close to Employment Sites, Transit Centers and Park and Ride Lots [D4].)

F. TRAFFIC FLOW IMPROVEMENTS.

F1. Preferential Treatment of HOVs. See measure B4 and C1.

F2. Ramp Metering. Caltrans District 4 is currently working on a comprehensive ramp metering program for the region's freeways. Ramp metering must include bypass lanes for buses and carpools. Jurisdictions placing this measure in their Deficiency Plans must show how they will work with Caltrans and MTC to help fund and assist in expediting the implementation of ramp metering on freeway ramps within their community. Solano County would coordinate with any ramp metering plans developed by Caltrans, District 10. This measure would be implemented on a system-wide basis. *(See note on page 3 regarding this measure.)*

F3. Auxiliary Lanes of Up to One Mile in Length Where HOV Lanes are Provided. This measure would allow the addition of freeway auxiliary lanes between interchanges of not more than one mile in length (i.e., in locations with closely spaced interchanges) to promote ease of HOV lane access and egress and provide for safe merging of conflicting

---

[9] Cities and counties, prior to zoning for or approving housing or other sensitive receptors (e.g., schools, hospitals or convalescent facilities) near industry should consider the nature of activity that may occur and whether that activity does/could pose a risk of nuisance (e.g., odors) or potential public health problems. Similar care should be taken when considering locating industry or related land uses near residences and other sensitive receptors. BAAQMD Planning Division staff is available in such cases to advise cities and counties of appropriate action and mitigation strategies (e.g., buffer zones) where feasible.

traffic. This measure is for *freeways only* (not expressways), since expressway auxiliary lanes would diminish the safety of bicyclists. This measure would be implemented on a system-wide basis. *(See note on page 3 regarding this measure.)*

F4. Signalization Improvements. Jurisdictions would be expected to improve signal timing and sequencing to smooth traffic flow and increase average speeds during the peak periods. Jurisdictions could identify roadways to undergo signalization improvements, as well as a timetable for doing so. Jurisdictions that have planned improvements can use those programs. Signalization improvements should be coordinated with any programs to improve signalization and preemption advantages for transit vehicles. This measure would be implemented on a system-wide basis. *(See note on page 3 regarding this measure.)*

F5. Computerized Traffic and Transit Control/Management on Arterials. This measure includes installing traffic sensors, closed circuit television, low wattage "highway-advisory radio" broadcasts, and centrally controlled changeable message signs on local arterials to convey current traffic and transit information. This driver and transit rider information system will supply travelers with real-time traffic and transit information to assist them in planning routes and times of travel. This will be especially helpful in reducing congestion from surges of traffic such as special events, sporting events and parades. *(See note on page 3 regarding this measure.)*

F6. Turn Lanes at Intersections. This measure would be applicable on arterials where placement of a maximum of one left turn lane and/or a maximum of one right turn lane per approach would significantly reduce average stopped delay at an intersection. Double left- or double-right turn lanes would not be appropriate at intersections or freeway/arterial on/off ramps since these create an unfriendly environment for trips by non-motorized modes (pedestrian, bicycle and other travel).[10] This measure would be implemented locally.

---

10 An exception to the double turn lane restriction for arterial/arterial intersections would be appropriate only in cases where all of the following criteria are met: (1) the curb to curb distance remains the same for all approaches after changes to intersection geometry; (2) the width of the median (if any), which serves as pedestrian refuge, is not reduced to accommodate changes to intersection geometry; (3) the signal cycle length is reduced so pedestrians have more frequent opportunities to cross the intersection; (4) the minimum green time in each phase (for pedestrian crossing) is maintained or increased; and (5) the width of the right most through lane is maintained or increased from its width prior to changes to intersection geometry (for bicyclists' safety).

F7. Turn Restrictions at Intersections. This measure consists of restricting turns at some intersections throughout the day or during peak periods only. This measure can be implemented locally.

F8. Reversible Lanes. This measure is applicable on arterials in areas of employment concentration, where congestion occurs in the inbound direction in the morning and the outbound direction during the afternoon. It consists of temporarily increasing the capacity of the congested direction, with the reversed lane dedicated as an exclusive lane for buses, carpools and vanpools. This program can be implemented locally.

F9. One Way Streets. In areas of high traffic volumes, jurisdictions can convert roadways to one-way streets. This measure has been employed in many of the larger central business districts within the Bay Area. Jurisdictions using this measure should identify streets to be converted to one-way and an implementation schedule. However, streets should not have the parking lane taken away where this would cause conflicts between bicyclists and motor vehicles by decreasing the lane area for bicyclists.[11] This program can be implemented locally.

F10. Targeted Traffic Enforcement Programs. Where double parking, parking in bus stops, "gridlock" or illegal use of HOV lanes pose a problem, jurisdictions can provide additional parking and traffic enforcement to help manage congestion. This program can be implemented locally.

F11. Restrictions on Curb Side Deliveries and On-Street Parking. This measure is intended as a peak hour measure. The intent is to handle peak flows without adding permanent capacity to the roadway. It is expected that this measure would be used in conjunction with measures to provide arterial HOV lanes or transit priority lanes facilities. In some instances, restrictions may only apply to one-side or for a portion of a roadway/arterial, depending on the peak-flow. This measure may also be useful in handling congestion around commercial areas during their peak period. Jurisdictions may require that all deliveries be made at the rear of buildings, if space and building lot design allows. This program can be implemented locally.

---

[11] A combination bus and bike lane would be acceptable since the frequency of buses is limited.

SECTION II

BAAQMD ADMINISTRATION OF DEFICIENCY LIST

DISTRICT REVIEW OF MEASURES NOT ON THE APPROVED LIST

Section 65089.3(b)(1)(c) of the State Government Code requires that any programs, actions or improvements **included in a Deficiency Plan** which are not taken from the adopted District list may not be implemented unless approved by the District.[1] To facilitate the timely review of such measures the following procedures should be followed.

(1) The District's Air Pollution Control Officer (APCO) and the appropriate Congestion Management Agency should be notified concurrently at the earliest practicable date of any local government's intent to seek District approval of an unlisted measure.

(2) A complete description of the proposed measure(s) should be submitted to the District and the appropriate CMA concurrently. We recommend that the submittal include all documentation demonstrating the effectiveness of the proposed measure in reducing VMT on the CMP system. The District will inform the local government in writing within thirty days if additional information is needed. Review of the measure(s) will not commence until all needed information has been received by the District.

(3) Once all relevant information has been received regarding the measure(s), the District Board of Directors, upon receiving a recommendation from the APCO, will either approve or disapprove the measure(s) within ninety (90) days. The APCO will notify the local government and the applicable Congestion Management Agency concurrently in writing of the reasons for the determination.

BIENNIAL UPDATE OF LIST

The list will be updated every two years, immediately following the period during which Congestion Management Agencies make their determinations that local governments conform (or do not conform) to requirements of the CMP legislation. Changes to the measures on the list or to the procedures governing their implementation will be adopted by the District's Board of Directors at a regularly scheduled meeting. Drafts of any changes will be available for public review at least two months prior to the Board taking action. District staff will continue its regular, ongoing consultative process with CMAs, MTC, Caltrans and ARB through the Clean Air/Congestion Management Working Group.

---

[1] Following adoption of this Deficiency List by the BAAQMD Board of Directors, California Congestion Management Program (CMP) law does not prohibit cities, counties, CMAs and Caltrans from continuing to manage congestion by including in their **Capital Improvements Programs** traffic flow improvements that are thought to have a long term detrimental effect on air quality (e.g., freeway, expressway, and arterial widening for single occupant vehicles and intersection improvements of any geometry). The law does however preclude cities and counties from placing in a **Deficiency Plan** any program, action or improvement not on this Deficiency List, unless approved by the BAAQMD according to administrative procedures outlined in this section.

Attachment 1

Excerpts from Government Code of the State of California (as amended in 1992 by the California Legislature [AB 2109/AB 3093]).

65089.3

(a) The agency shall monitor the implementation of all elements of the congestion management program. Annually, the agency shall determine if the county and cities are conforming to the congestion management program, including, but not limited to, all of the following:

(1) Consistency with levels of service and performance standards, except as provided in subdivisions (b) and (c).

(2) Adoption and implementation of a trip reduction and travel demand ordinance.

(3) Adoption and implementation of a program to analyze the impacts of land use decisions, including the estimate of the costs associated with mitigating these impacts.

(b) (1) A city or county may designate individual deficient segments or intersections which do not meet the established level of service standards if, prior to the designation, at a noticed public hearing, the city or county has adopted a Deficiency Plan which shall include all of the following:

(A) An analysis of the causes of the deficiency.

(B) A list of improvements necessary for the deficient segment or intersection to maintain the minimum level of service otherwise required and the estimated costs of the improvements.

(C) A list of improvements, programs, or actions, and estimates of costs, that will (i) measurably improve the level of service of the system, as defined in subdivision (b) of Section 65089, and (ii) contribute to significant improvements in air quality, such as improved public transit service and facilities, improved non-motorized transportation facilities, high occupancy vehicle facilities, parking cash-out programs, and transportation control measures. The air quality management district or the air pollution control district shall establish and periodically revise a list of approved improvements, programs, and actions which meet the scope of this paragraph. If an improvement, program, or action is on the approved list and has not yet been fully implemented, it shall be deemed to contribute to significant improvements in air quality. If an improvement, program, or action is not on the approved list, it shall not be implemented unless approved by the local air quality management district or air pollution control district.

(D) An action plan, consistent with the provisions of Chapter 5 (commencing with Section 66000) of Division 1 of Title 7, that shall be implemented, consisting of improvements identified in paragraph (B), or improvements, programs, or actions identified in paragraph (C), that are found by the agency to be in the interest of the public's health, safety and welfare. The action plan shall include a specific implementation schedule.

(2) A city or county shall forward its adopted Deficiency Plan to the agency. The agency shall hold a noticed public hearing within 60 days of receiving the Deficiency Plan. Following the hearing, the agency shall either accept or reject the Deficiency Plan in its entirety, but the agency may not modify the Deficiency Plan. If the agency rejects the plan, it shall notify the city or county of the reasons for that rejection.

APPENDIX A

Cities/Counties/CMAs' use is advised (not required by California law)[1]

Procedures for the implementation of the list of programs, actions and improvements developed by the Bay Area Air Quality Management District in response to the Congestion Management legislation is outlined below. The items listed in Section I provide a wide range of options from which communities can choose during the development of a Deficiency Plan. One of the key issues that will confront the preparers of Deficiency Plans is how many of the items from the list must be included in a particular plan.

The responsibility for determining the adequacy of a Deficiency Plan rests with the Congestion Management Agencies. The CMAs can either accept or reject a Deficiency Plan, but may not modify it. The CMAs will be responsible for developing appropriate criteria for determining the adequacy of Deficiency Plans submitted by the communities. To assist the CMAs with this task, we have included a methodology for assessing whether or not enough of the items from the list have been included in a Deficiency Plan.

The approach that we have chosen revolves around the offsetting of a deficient facility's contribution to congestion and air quality. A Deficiency Plan is adequate if it includes sufficient items from the District's list to offset over the system the increased amount of vehicle miles travelled (VMT) on the deficient facility due to its operation at LOS F rather than LOS E.[2] The basic steps in the process are described below.

STEP 1 - Identify v/c Ratio That Must be Mitigated:

Use the county wide transportation model to identify the volume to capacity (v/c) ratio of the deficient segment. The amount by which this v/c ratio exceeds (or is projected to exceed) the upper limit of the Congestion Management level of service standard (e.g., 0.99 for LOS E) is the v/c ratio increment that must be mitigated through implementation of items on the BAAQMD's list.

---

1 The next few years will offer a number of opportunities for cities and counties to examine different ways of choosing deficiency strategies as they come up with plans mitigating congestion on parts of the network that have failed the Level of Service (LOS) test. We urge cities, counties and CMAs to encourage experimentation in alternative methods to match LOS-deficiencies with congestion management and air quality strategies and remedies.

2 The BAAQMD acknowledges that not every measure on the Deficiency List will reduce VMT (see Introduction). Some measures do more to improve congestion than air quality (e.g., traffic flow improvements, HOV lanes involving highway widening, etc. These measures have been included on the Deficiency List because they support other air beneficial measures (e.g., an HOV lane supports ridesharing) or encourage jurisdictions to implement low cost, cost effective strategies to enhance personal/vehicular mobility (e.g., lane re-striping and signs for one-way streets/reversible lanes to increase vehicle throughput and lane re-striping and signs to create wide outside lanes for bicycles).

Let's say the forecast v/c ratio is 1.12 (LOS F) and the v/c ratio necessary to achieve the county wide LOS Standard is 0.99 (upper limit of LOS E). This would mean that mitigation items would need to be identified that offset a v/c ratio 'deficiency' of 0.13.

STEP 2 - Translate the v/c Ratio Deficiency to Vehicle Miles Traveled (VMT)

Consider the segment of U.S. 101 from Novato to Petaluma in Marin and Sonoma Counties.[3] This segment of U.S. 101 is approximately seven miles in length and hypothetically both Marin and Sonoma Counties' transportation models agree its projected northbound traffic volume in the 2000 PM Peak Hour is 4,039.

$0.13 \times 7 \times 4{,}039 = 3{,}675$ VMT

Thus, 3,675 VMT would need to be mitigated through items from the BAAQMD list.

STEP 3 - Identify Items that Offset the VMT Deficiency

The BAAQMD has prepared a list of Deficiency Plan mitigation items that improve traffic conditions and benefit air quality throughout the Bay Area. The city, county or CMA preparing a Deficiency Plan may choose any of these items, individually or in combination. Since we recognize certain items may be more effective at reducing VMT in a given geographic area, we have outlined two options to assess the adequacy of Deficiency Plan items:

Option 1: Use Region wide Effectiveness Data. The data contained in Table 1 reflect region wide effectiveness of various TCMs in the '91 Clean Air Plan.[4] (This table is forthcoming; not included in this draft.) The proportion of the Deficiency Plan Item (or '91 Clean Air Plan TCM) defined in Table 1 that the local government identifies funding for in the Deficiency Plan and implements (or effects implementation) prior to the end of the 7-Year CIP horizon year is the proportion of VMT reduction for which credit can be taken. Detail on applying Option 1 is presented below under "Examples."

Option 2: Exercise County wide Transportation Model. The VMT reduction effects of certain Deficiency Plan Items (e.g., transit improvements) may be analyzed more accurately using a county wide transportation model. Certain Deficiency Plan Items (e.g., new bicycle lockers) could not be analyzed using a county wide transportation model.

---

3 This segment of U.S. 101 currently operates at LOS F, and as allowed by statute, both Marin and Sonoma counties have established a LOS standard of F for the segment. Thus this is not a segment for which a Deficiency Plan will be required. Both the example selected and the numbers used are intended for illustration only.

4 "Transportation Control Measures for the San Francisco Bay Area: Analyses of Effectiveness and Costs," prepared for the BAAQMD by Deakin, Harvey, Skabardonis, Inc., July 1991 (revised October 1991). Copies of this report are available from the BAAQMD upon request.

Examples of Option 1

1. Provide funding for the BAAQMD-delegated Region wide Trip Reduction Rule to apply to 61,000 additional employees in Marin and Sonoma Counties (beyond requirements of the rule).

The rule was assumed in the '91 Clean Air Plan to apply to 3 Million employees.
61,000/3,000,000 = 0.02033 (just over 2%)

1999 VMT (Daily) = 110,856,000
Effectiveness of TCM at reducing VMT = 3.2% (from Table 1)

110,856,000 x 0.032 = 3,547,392 daily VMT reduced by implementation of rule throughout Bay Area, or 354,739 peak-hour VMT (estimated at 10% of daily)

354,739 VMT x 2.033% = 7,212 VMT reduced during the peak hour as a result of implementing the Deficiency Plan Item

2. Provide support for RIDES staff to inform 5,000 employees at Hamilton Field about commute alternatives

The TCM was assumed to apply to 250,000 employees.
5,000/250,000 = 0.02 (2%)

1999 VMT (Daily) = 110,856,000
Effectiveness of TCM at reducing VMT = 0.18% (from Table 1)

110,856,000 x 0.0018 = 199,541 daily VMT reduced by implementation of program throughout Bay Area, or 19,954 peak-hour VMT (estimated at 10% of daily)

19,954 VMT x 2% = 399 VMT reduced during the peak hour as a result of implementing the Deficiency Plan Item. This would mean that 40 of the 5,000 informed about commute alternatives traveling during the peak hour actually shift modes, assuming an average trip length of 10 miles.

3. Fund Phase II bus service expansion at $12.88 Million/yr. The CMAs would spearhead member local governments in the 101 Corridor entering into a service agreement with the Golden Gate Bridge, Highway and Transportation District to provide additional service in the U.S. 101 Corridor from Santa Rosa to San Francisco.

The TCM was assumed to implement new bus service costing $140 Million/yr.
12.88/140 = .092 (9.2%)

1999 VMT (Daily) = 110,856,000
Effectiveness of TCM at reducing VMT = 0.4% (from Table 1)

110,856,000 x 0.004 = 443,424 daily VMT reduced by implementation of service expansion throughout Bay Area, or 44,342 peak-hour VMT (estimated at 10% of daily)

44,342 VMT x 9.2% = 4,079 VMT reduced during the peak hour as a result of implementing the Deficiency Plan Item.

Summary of Examples

The items in Examples 1 or 3 would be adequate to offset the required 3,675 peak hour VMT reduction. The item selected for Example 2 would not be sufficient to offset the required VMT reduction. Thus, additional Deficiency Plan items would need to be identified in conjunction with the item in Example 2.

Content of Deficiency Plans

Each Deficiency Plan should show the amount of VMT[5] to be offset, the data it was derived from, and how each item selected from the BAAQMD's list contributes to the offsetting of the VMT increment. All calculations done should be clearly presented.

saved as C:\USER\DAR\DEFICIEM\DRAFTLST.DOC

5 Recognizing that all information in Appendix A of this list is advisory and not required by California law, CMAs may elect to use surrogate measures of deficiency in lieu of VMT (e.g., vehicle trips, average vehicle speed, etc.), especially where level of service monitoring conducted by the CMA and/or its cities does not produce data necessary for calculating v/c ratios and VMT (e.g., "floating car" speed surveys).

Table 1

1997 Deficiency Measure Effectiveness
(to be used for improvements implemented by 2000)

Deficiency Measure	Related CAP TCM	Description	Quantity	Percentage Region Wide Daily VMT Reduced	Amount Region Wide Daily VMT Reduced
A1	9	Bicycle Plan Impl Ph I	$3 M/yr. TDA Article 3	0.01	11,890
	9	Bicycle Plan Impl Ph II	$5 M/yr. developer mit/TRO	0.02	23,781
A2	5, 9	Transit/Bicycle Integration		No information available	
A3	9	Bike Lockers/Racks @ PNR Lots		No information available	
A4	9, 16	Bike Facilities/Showers		No information available	
A5	16	Impr Pedestrian Facilities		No information available	
A6	16	Pedestrian Signals		No information available	
A7	16	Lighting for Ped Safety		No information available	
B1	3	Bus Service Exp Ph I	$1 M/yr.	0.17	202,135
	3	Rail Service Exp Ph II	$100 M/yr.	0.60	713,418
	3	Bus Service Exp Ph II	$140 M/yr.	0.40	475,612
	4	Rail Ext Ph II/MTC Reso 1876	$140 M/yr.	0.70	832,322
	5	Rail Access Impr Ph II	$50 M/yr.	0.30	356,709
B2	6	Intercity Rail Ph II	$10 M/yr.	0.04	47,561
B3	7	Reg Ferry Plan Impl	$10 M/yr.	0.03	35,671
B4	8, 12, 16	Pref Treatment Bus/LRT		No information available	
B5	5, 13	Transit Info/Promotion		No information available	
B6	13	Bus-Rail Xfer Subsidy	$5 M/yr.	0.05	59,452
	13	Reduced Transit Fares	$10 M/yr.	0.10	118,903
B7	13	Employer Transit Subsidy		No information available	

Deficiency Measure	Related CAP TCM	Description	Quantity	Percentage Region Wide Daily VMT Reduced	Amount Region W Daily VM Reduc
B8	13	Transit Ticket Distrib	50% employer subsidy for 10% workers	0.06	71,342
	13	Transit Stores	$3 M/yr.	0.02	23,781
B9	13	Improved Timed Xfers		No information available	
B10	13	Fare Coordination	Impr inter-dist wait times 10%	0.05	59,452
B11	12	Transit Signal Preempt	$2 M/yr.	0.02	23,781
B12	12, 16	Bus Stop Bulbs		No information available	
B13	10	School Bus Services	$5 M/yr.	0.03	35,671
	10	50% Student Fare Subsidy	$5 M/yr.	0.02	23,781
C1	15	Ridesharing Toll Elimin	$20 M/yr.	0.30	356,709
C2	1	Employer Audits	$750,000/yr.	0.18	214,026
D1	8	Pref Treatment for HOVs		No information available	
D2	12	HOV Lanes on Arterials		No information available	
D3	8	HOV Sys Exp Ph II	$50 M/yr.	0.45	535,064
D4	8	HOV to HOV Facilities		No information available	
D5	8	Direct HOV Entr Ramps		No information available	
E1	2	TRO Stricter than BAAQMD Rule:			
	2	Employees at sites < 100 empls	1,200,000	0.50	594,515
	2	$3.00 Worksite Parking Charge	2,880,000	1.90	2,259,158
E2	1	ETC Training Materials	$15,000/yr.	0.02	23,781
E3	16, 18	Childcare Facilities		No information available	
E4	16, 18	Retail Services		No information available	
E5	20	Telecommuting		No information available	

Deficiency Measure	Related CAP TCM	Description	Quantity	Percentage Region Wide Daily VMT Reduced	Amount Region Wide Daily VMT Reduced
E6	22	Non-work Parking Charges	Min. $0.60 hr./Empl. 100% transit subsidy	4.20	4,983,929
E7	15, 22	Work Parking Charges/Cash Out		No information available	
E8	16	Indirect Source Ctrl	$12 M/yr. Design mod. new/exist	0.80	951,225
	18	Incr Density nr Transit	200 DUs @ Rail sta./rezoning	0.05	59,452
F1	8, 12, 16	Pref Treatment Bus/LRT		No information available	
F2	11, 12	Ramp metering		No information available	
F3	8 (as support)	Freeway Auxiliary Lanes		No information available	
F4	12	Signal Timing Ph I		Thought to increase VMT	
	12	Signal Timing Ph II		Thought to increase VMT	
F5	11	CCTV/Incident Mgt		Thought to increase VMT	
	11	Traffic Advisory Sys		Thought to increase VMT	
F6	12 (as support)	Turn Lanes @ Intersections		No information available	
F7	12 (as support)	Turn Restr @ Intersections		No information available	
F8	12 (as support)	Reversible Lanes		No information available	
F9	12 (as support)	One Way Streets		No information available	
F10	12 (as support)	Targeted Traffic Enforcement		No information available	
F11	12 (as support)	Delivery/Parking Restrictions		No information available	

Table 1 Assumptions and Notes

(1) Percentage VMT reductions taken from Transportation Control Measures for the S Francisco Bay Area: Analyses of Effectiveness and Costs, Deakin, Harvey, Skabardonis Inc., July 1991 (revised October 1991). Data adjusted by BAAQMD staff for Deficiency List measures B13 and E1 based on additional information known about project/rule implementation as of October 1992.

(2) Daily VMT in 1997 for Nine County Bay Area = 118,903,077
Source: Transportation Improvement Program for the Nine County San Francisco Bay Area, Volume III. Metropolitan Transportation Commission, September 23, 1992, Table A.1, p. III-B-74.

(3) Use peak hour factor of roadway segment to calculate peak hour VMT reduction associated with each measure. If unknown, assume 10% for arterials and 8% for freeways/expressways.

(4) Quantities involving a dollar expenditure per year are assumed to have a five year lifespan. For example, if City A wants to spend $500,000 over 5 years toward the lease of space and staff to operate a transit store as a deficiency plan measure, City A would take credit for implementation of $500,000/$15,000,000 (or 3.3%) of that measure. Daily VMT would be reduced 23,781 x 0.033, or 785 VMT; peak hour VMT would be reduc 2,378 x 0.033, or 79 VMT. Deficiency plans that include measures involving ongoin operating costs would need to make a guarantee of continued funding as part of plan.

APPENDIX D

Guidelines for Deficiency Plan

Appendix D

Deficiency Plan Guidelines

Process

The processes for developing and approving deficiency plans are described on the following flow charts. Figure 7-1 describes the general deficiency plan process. Figure 7-2 depicts the deficiency identification process based on the biennial LOS monitoring process.

Figure 7-3 illustrates the process to be followed for development of two types of single-jurisdictional deficiency plans: location-specific and citywide. A location-specific deficiency plan is required for a deficiency at a single location wholly located within a single jurisdiction and caused by traffic from that jurisdiction. A citywide deficiency plan is required for deficiencies at several locations within a single jurisdiction all caused by traffic from that jurisdiction.

There are also two types of multi-jurisdictional deficiency plans, areawide and cross-county boundaries. An areawide deficiency plan is required for a deficiency located within San Mateo County and caused by traffic generated by more than one jurisdiction, all located within San Mateo County and for a deficiency located within San Mateo County caused by a traffic generator located within San Mateo County and owned by a jurisdiction outside of San Mateo County. The process for areawide deficiency plans is illustrated on Figure 7-4.

A cross-county boundary deficiency plan would be applicable for a deficiency with significant traffic contributions from other counties. These types of deficiency plans are not required by the law because they can be Aresolved@ by the exclusion of interregional traffic. It is C/CAG's intent to work with CMAs of contributing counties to jointly develop deficiency plans for these locations. The process for cross-county boundary deficiency plans is presented on Figure 7-5.

Figure 7-1

DEFICIENCY PLAN GENERAL PROCESS

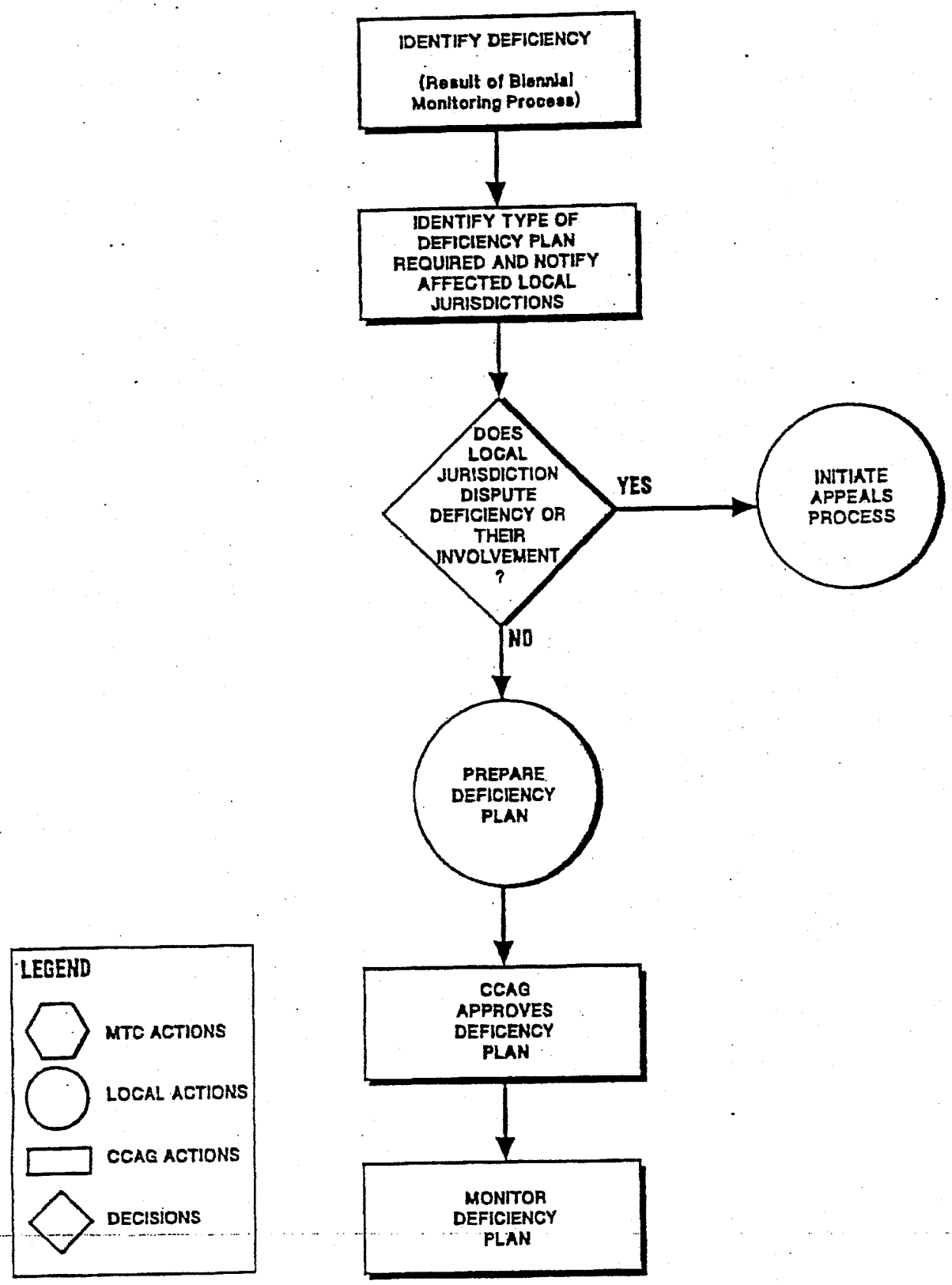


Figure 7-2

IDENTIFICATION OF DEFICIENCY AND TYPE OF DEFICIENCY PLAN

(BIENNIAL MONITORING PROCESS)

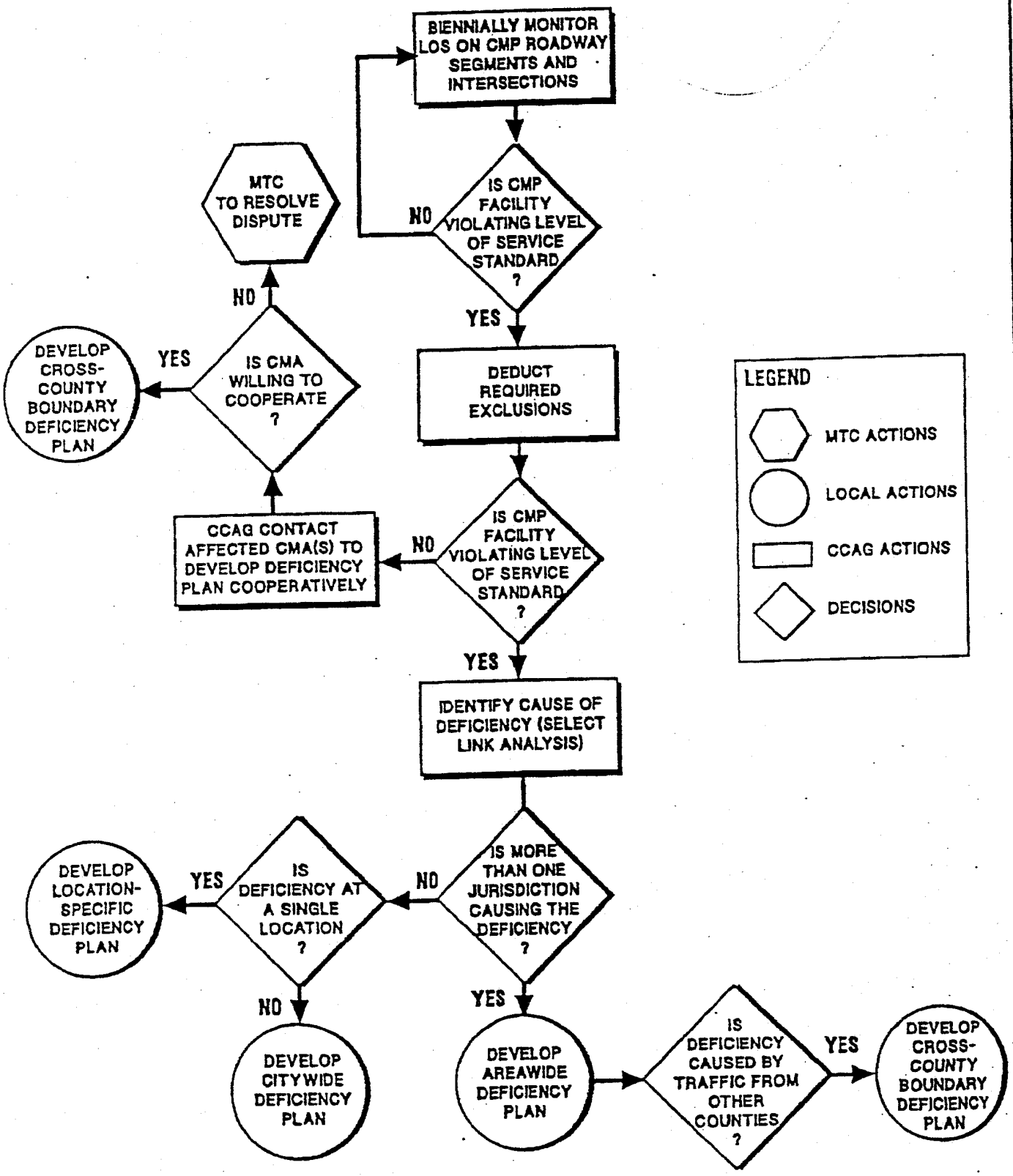


Figure 7-3

DEVELOPMENT OF LOCATION-SPECIFIC OR CITYWIDE DEFICIENCY PLAN

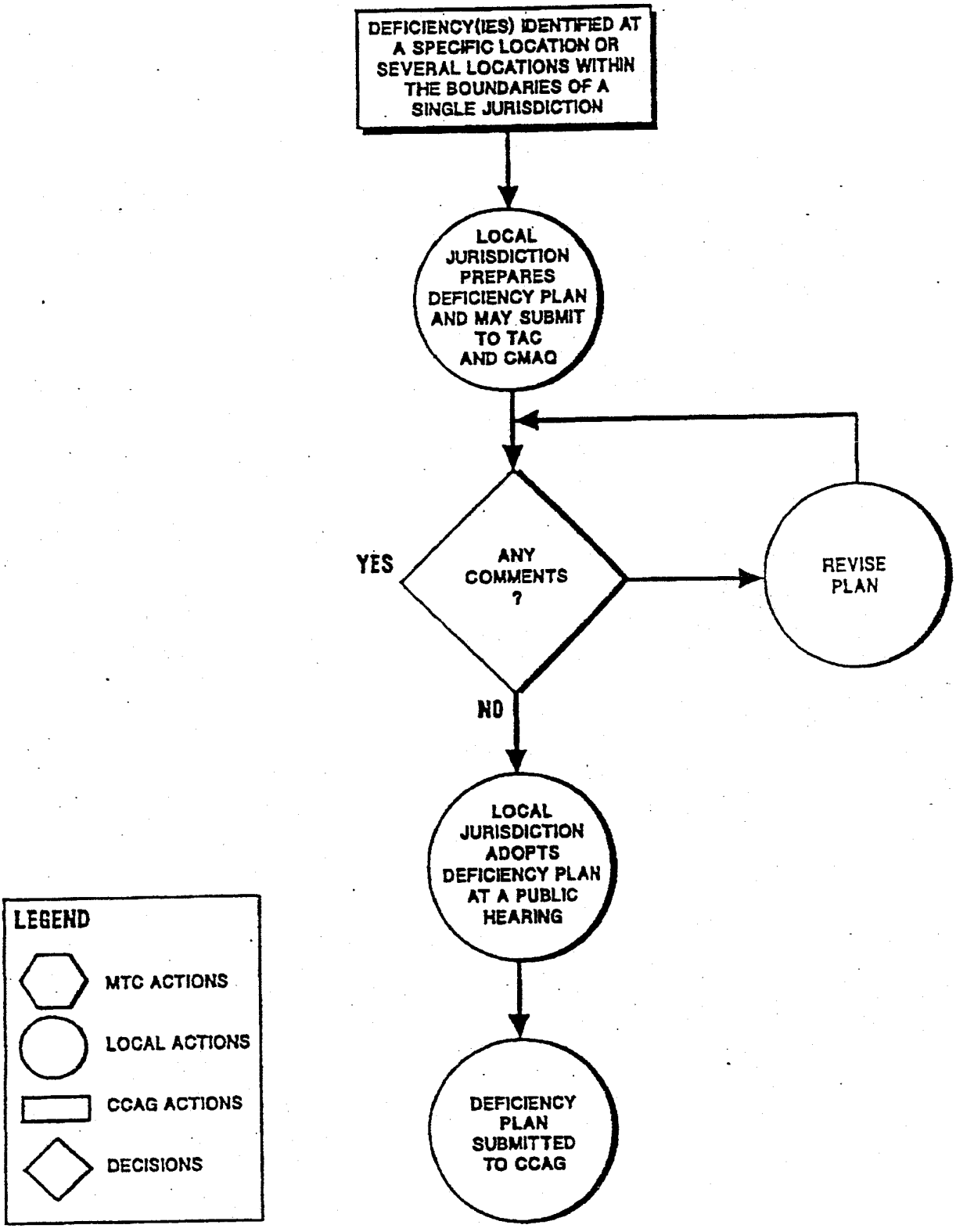


Figure 7-4

DEVELOPMENT OF AREAWIDE DEFICIENCY PLAN

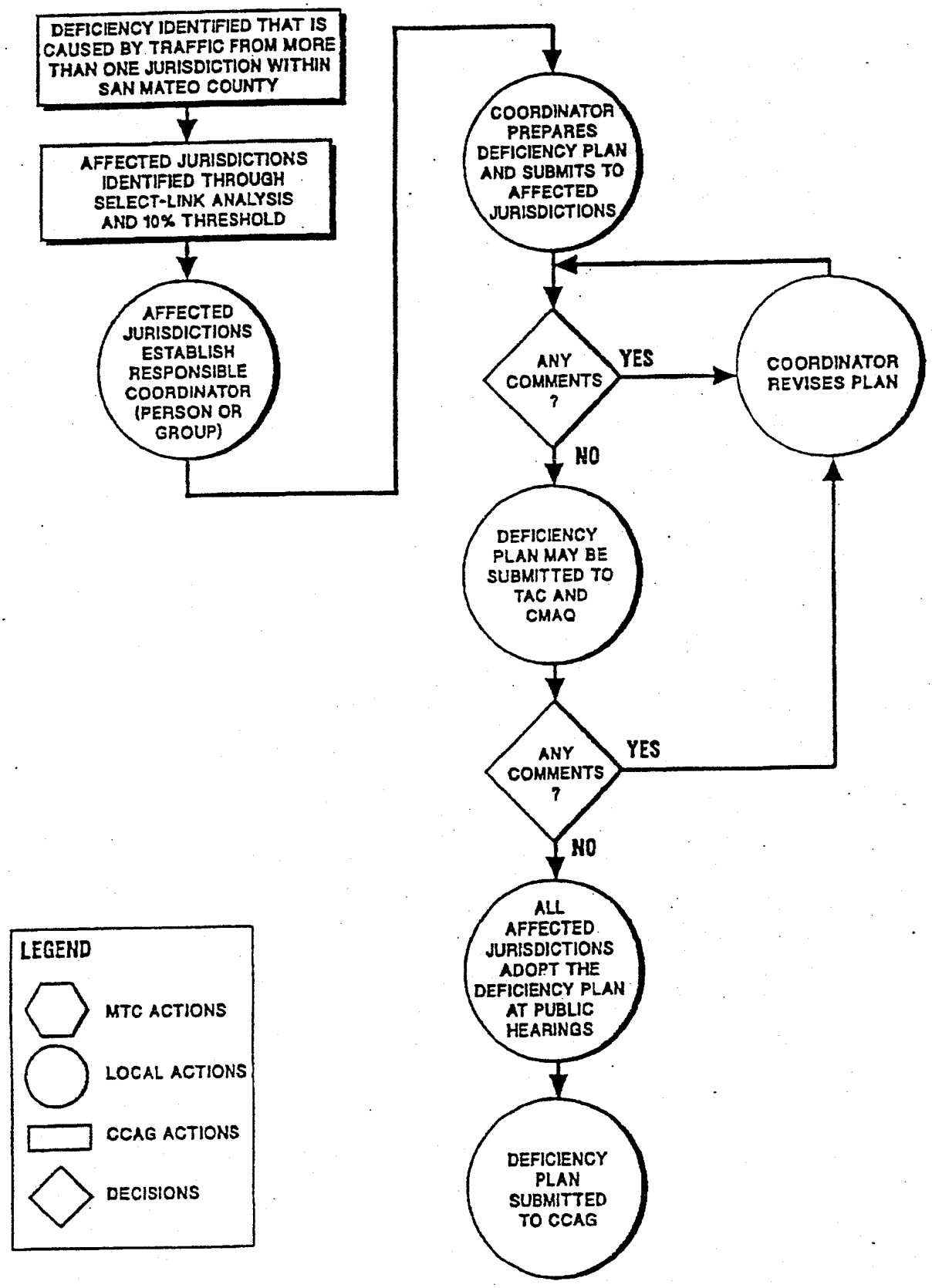


Figure 7-5

DEVELOPMENT OF CROSS COUNTY BOUNDARY DEFICIENCY PLAN

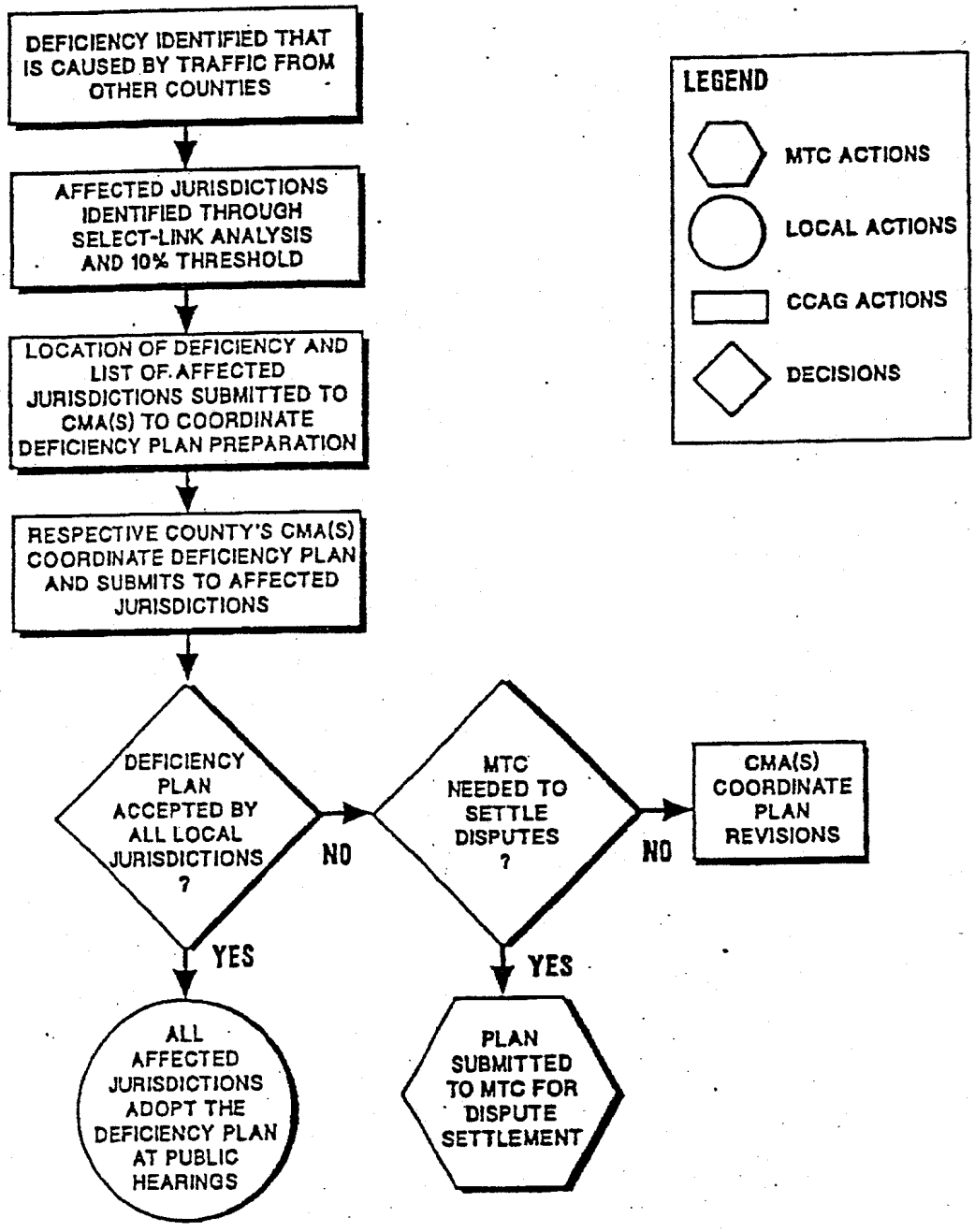


Figure 7-6 shows the process to be followed for C/CAG's approval of deficiency plans. Figure 7-7 presents the process for a local jurisdiction to appeal their involvement in a deficiency plan to C/CAG. Figure 7-8 illustrates the process for monitoring deficiency plans.

Deficiency Identification

The deficiency will be identified by the biennial level of service monitoring process (see Figure 7-2). Roadway segments or intersections on the CMP Roadway System whose existing LOS is F will be addressed in the Countywide Transportation Plan. An LOS deficiency may also be found to exist as a result of a monitoring program developed by a city or the County as part of the approval process for a local land use decision, as discussed in Chapter 6. The seven exclusions (see page 7-4) will be incorporated into the level of service calculations to determine whether a deficiency is occurring. Next, a select-link analysis will be conducted using the San Mateo Countywide Travel Demand Forecasting model to determine the origins of the traffic on the deficient roadway segments or intersections. A jurisdiction will be considered to be contributing to the deficiency if the amount of traffic at the deficiency and generated within its boundaries is greater than 10 percent of the capacity of the deficient location.[1]

If only one jurisdiction is causing the deficiency, then it can either develop a location-specific deficiency plan or a citywide deficiency plan, if there are several deficiencies within that jurisdiction. If more than one jurisdiction is causing the deficiency, either an areawide or cross-county boundary deficiency plan would be required.

Development of Deficiency Plans

The steps to develop the four types of deficiency plans are outlined on Figures 7-3 through 7-5. If a jurisdiction must prepare a deficiency plan, the draft deficiency plan must address these following points:

- Each deficiency's cause and magnitude must be described.
- Actions to be considered should include those that remedy the specific deficiency or that improve the level of service on the CMP Roadway System overall.

[1]The 10 percent of capacity threshold represents a Bay Area standard that was developed by the Bay Area CMA Association. It is based on the fact that 10 percent of capacity represents a change of one full level of service value. It was decided that if jurisdictions were contributing enough traffic to a specific location to change the level of service by one full value, then they should be required to participate in the deficiency plan preparation.

Figure 7-6

DEFICIENCY PLAN APPROVAL PROCESS

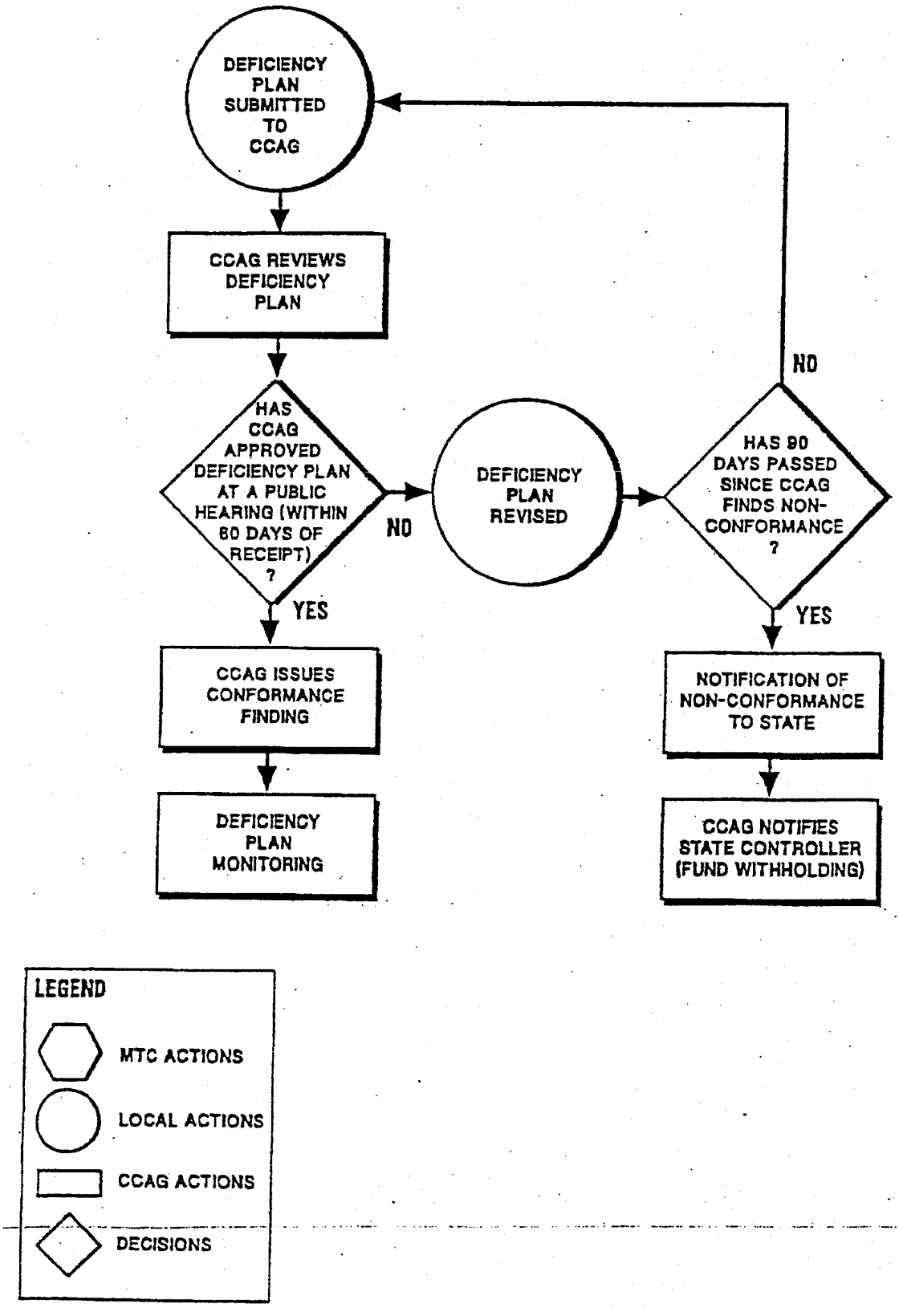


Figure 7-7

DEFICIENCY PLAN APPEALS PROCESS

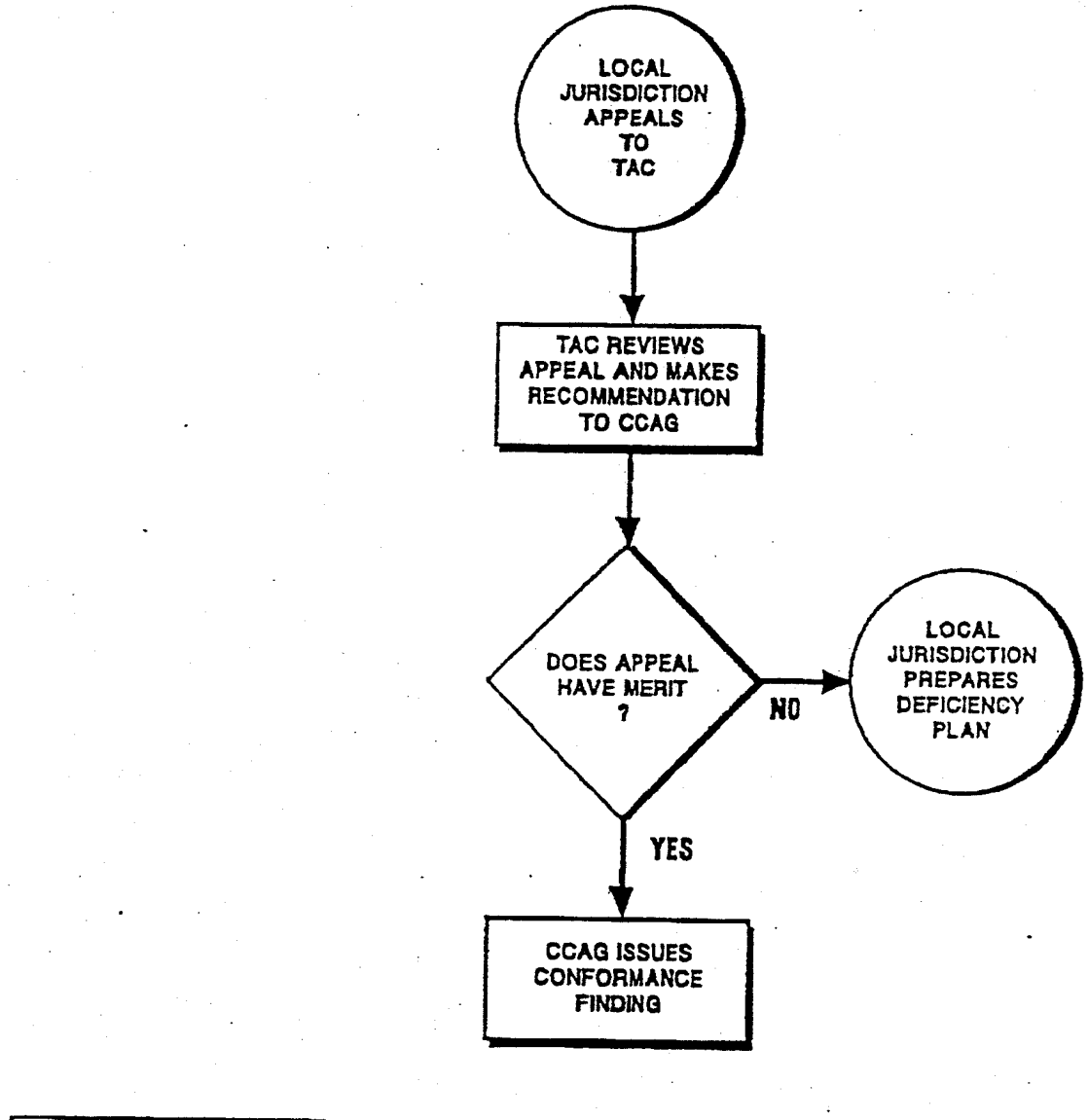
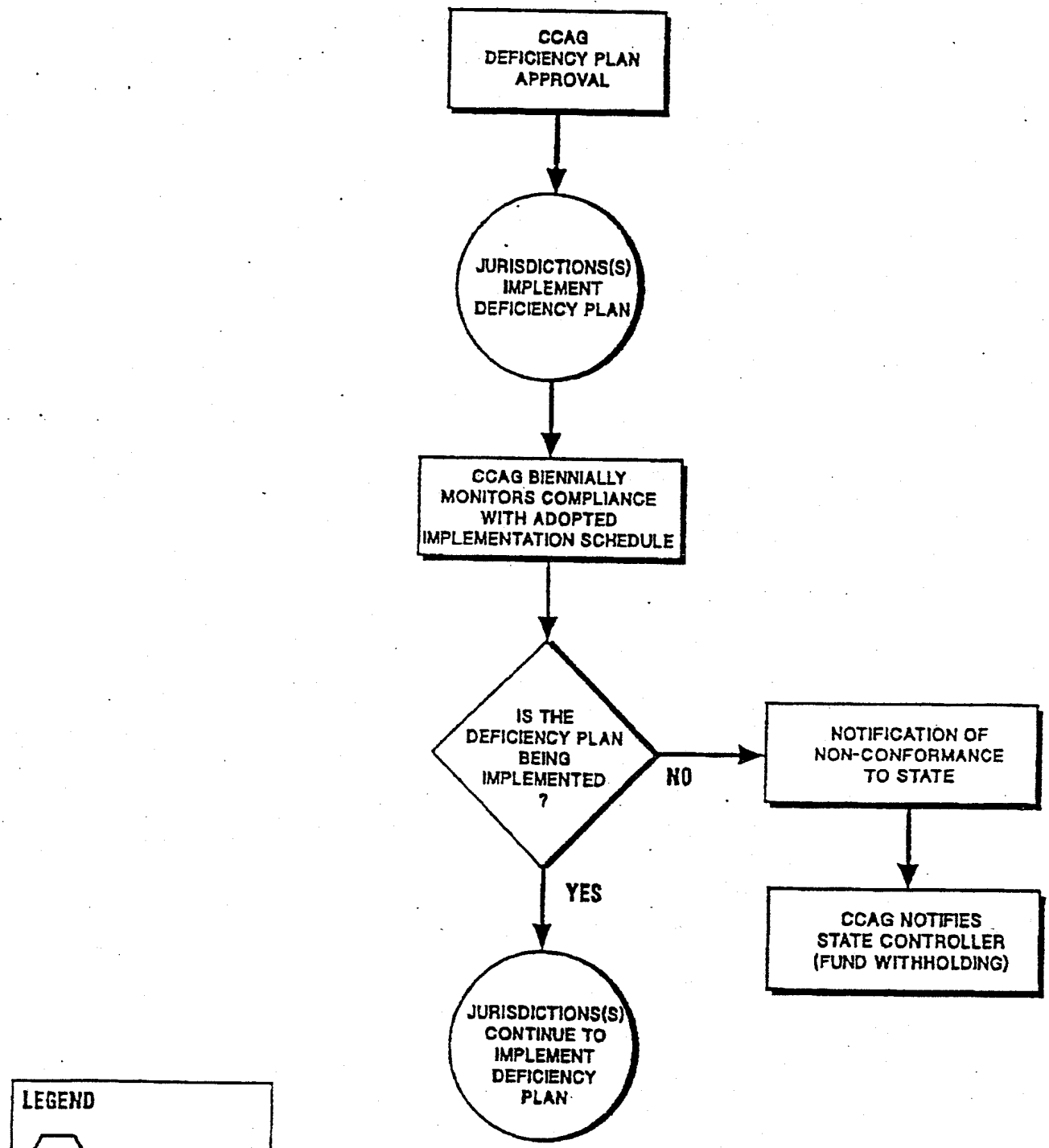


Figure 7-8

DEFICIENCY PLAN MONITORING



- If actions are considered that are intended to improve the overall LOS on the CMP Roadway System, those actions listed in the Bay Area Air Quality Management District's guidelines for deficiency plans, and other possible actions identified by affected jurisdictions and approved by the BAAQMD should be given a suitability assessment. Suitable system actions should be evaluated at a sketch-planning level in order to identify their potential effects on systemwide traffic congestion and air quality. (In some cases, traffic operations analyses or model forecasts may be required.) If this option is selected, a post implementation level of service should be established for the deficient locations, for monitoring purposes.

- A detailed action plan should be developed, including descriptions of the selected actions, anticipated costs and related funding sources, and a corresponding implementation schedule.

Deficiency Plan Approval

The activities included in the deficiency plan approval process are presented on Figure 7-6. As shown on that figure, local jurisdictions and C/CAG (and its representatives) will be responsible for ensuring that any deficiency plans that have to be prepared will meet the requirements of the CMP. Once C/CAG determines that a deficiency exists, a deficiency plan must be developed within 12 months. The jurisdictions may elect to have the TAC and CMAQ review the draft version of deficiency plans. These groups will try to resolve technical issues and will work with representatives of the local jurisdiction so that the local jurisdiction develops a deficiency plan acceptable to that jurisdiction and C/CAG.

A final deficiency plan must be adopted by the affected local jurisdiction(s) at a noticed public hearing. That public hearing must be scheduled not later than 90 days following the receipt by the local jurisdiction of C/CAG's written notification of the conformance findings.

A final plan must be approved by C/CAG. C/CAG will approve or reject a deficiency plan within 60 days of receipt of the deficiency plan from the local jurisdiction. C/CAG cannot modify a deficiency plan. If C/CAG rejects a deficiency plan, it must specify why it was rejected.

Deficiency Plan Appeals Process

The appeals process, as shown on Figure 7-7, has been added to accommodate local jurisdictions that dispute that a deficiency is occurring or that they should be involved in the development of a deficiency plan. The local jurisdiction would first make that appeal to the TAC. Information supporting their position (additional traffic counts, information refuting results of select-link analysis, etc.) should be presented. The TAC will then make a recommendation to C/CAG whether or not the appeal has merit. C/CAG will then make a decision to either uphold the appeal and issue a finding of conformance or to require the local jurisdiction to prepare or contribute to the deficiency plan.

Deficiency Plan Monitoring

Deficiency plans will be monitored biennially by C/CAG, prior to undertaking the conformance determination for the CMP, to establish whether they are being implemented according to the schedule described in their specific action elements. The monitoring process is shown on Figure 7-8.

b. Whether changes have occurred that require modifications of the original deficiency plan or schedule.

Each deficiency plan will include a schedule for implementation of the proposed actions. Compliance with the stated schedule will be monitored. A jurisdiction which is either not implementing the actions stipulated in the approved deficiency plan, or not adhering to the stated schedule, may be found by C/CAG to be in nonconformance. Once the action plan is implemented, the results of the monitoring will determine if the deficiency is still occurring. The evaluation may result in recommending changes to other elements of the CMP, such as the Capital Improvements Program (CIP) or Trip Reduction Ordinances (TROs). Action plans prepared as part of deficiency plans will be incorporated into future updates of the CMP.

Methodology

The scope of each deficiency plan's actions should match the severity of the problem being addressed. Extreme deficiencies will need more significant actions, while minor deficiencies may require the definition of only minor actions. The magnitude of the deficiency shall be influenced by the constraint(s) on capacity that prevent(s) a roadway or intersection from operating at its appropriate level of service.

Actions to resolve problems will fall into one of the following two categories: improvements designed to directly mitigate the specific deficiency, and improvements designed to improve the overall level of service on the CMP Roadway System and provide air quality improvements. Actions of the first type are intended to directly mitigate a deficiency. These include highway, transit, and transportation system improvements. Actions of the second type are intended to provide measurable improvements to air quality and level of service on the CMP Roadway System in cases where deficiencies on specific segments or at specific intersections cannot be mitigated directly. For these types of situations, the Bay Area Air Quality Management District has developed a list of available deficiency plan actions which are considered beneficial for air quality and congestion management. Jurisdictions may include actions other than those on this list, provided that they are reviewed and approved by the BAAQMD prior to adoption of the local deficiency plan. However, C/CAG has ultimate approval of the specific actions included in a deficiency plan.

When developing a deficiency plan, the most current BAAQMD list of actions must be considered. The current list was adopted by the BAAQMD on November 4, 1992, and is contained in Appendix C.

Deficiency plans should contain the following sections:

Introduction and Setting--a short description of the deficient roadway facility, including a map showing its location.

Deficiency Analysis--an explanation of the likely causes of the deficiency, and a quantitative assessment of the magnitude of the deficiency.

Improvement List--a list of the improvements necessary for the deficient segment or intersection to maintain (or attain) the Level of Service Standard and the estimated costs of the improvements.

Action List (Screening of Actions)--a listing of possible actions and a sketch-planning level evaluation of the most suitable actions.

Implementation Plan--a description of the actions proposed for implementation, their costs, a schedule for their implementation and completion, and the definition of responsible parties.

Monitoring Program--a description of the steps that the jurisdiction preparing the deficiency plan will take to monitor implementation of the actions included in the plan.

Appendix E

Descriptions of Transportation Control Measures (TCMs)

TRANSPORTATION CONTROL MEASURES (TCMs) — INCLUDED IN 2001 FEDERAL BAY AREA OZONE ATTAINMENT PLAN

Attachment B

TCM NUMBER	FEDERAL TRANSPORTATION CONTROL MEASURE (TCM)	IMPLEMENTATION STEPS / STATUS
TCM 1	Reaffirm commitment to 28 percent transit ridership increase between 1978 and 1983 (Emission credits assumed in baseline)	MTC reaffirms measure in 1982 review of Air Quality Plan. Assess effectiveness of measure in annual reports STATUS: Completed
TCM 2	Support post-1983 improvements identified in transit operators' five-year plans and, after consultation with the operators, adopt ridership increase targets for the period 1983 through 1987	Six major transit operators adopt FY 1983–87 plans by July 1982. MTC consults with operators on ridership targets by January 1983. MTC, through implementation of the TIP and allocation of regional funds, seeks to ensure operators' five-year plans are implemented. Ridership gains are monitored through annual reports. Note: Ozone emission reductions predicted based on a 15 percent increase in transit ridership from 1982–83 to 1986–87, which did not occur. STATUS: Under federal court review
TCM 3	Seek to expand and improve public transit beyond committed levels	• MTC seeks sources of new revenue — ongoing effort. • If funding exists, transit operators implement plans to expand services. STATUS: Completed
TCM 4	Continue to support development of HOV lanes (see also TCM 20) (Emission credit based on specific projects)	MTC will continue to support HOV lanes where justified on a case-by-case basis. The following projects are ones where HOV treatments are being considered: • I-580 from Rte. 24 to Bay Bridge – Environmental Impact Statement (EIS) to be completed fall 1983, project implementation by 1987 • US 101 in Marin (Stage 2) – Negative Declaration under review, project implementation by 1986 • I-80 — EIS to be completed September 1983, project implementation unknown • Rte. 237 from Lawrence Expressway to Rte. 17 – environmental documentation under review, construction by 1984–85. STATUS: Completed
TCM 5	Support RIDES' efforts (Emission reduction included in baseline)	• MTC to reaffirm measure in 1982 review of Air Quality Plan • Effectiveness of measure assessed in annual RFP reports STATUS: Ongoing
TCM 6	Continue efforts to obtain funding to support long-range transit improvements (No emission reductions taken; implementation assumed beyond 1987)	Assuming federal funding for new rail starts: • Guadalupe – engineering design to be completed fall 1983 • BART – design of North Concord and Warm Springs extensions will begin in FY 1982–83. STATUS: Completed; TCM eliminated per EPA action
TCM 7	Preferential parking (Emission reductions assumed in baseline)	MTC reaffirms measure in 1982 review of Air Quality Plan. Caltrans to open six lots in FY 1982–83, three in FY 1983–84 and eight in FY 1984–85 STATUS: Completed
TCM 8	Shared-use park-and-ride lots	Continue the ongoing program that will establish 14 new joint-use parking lots per year. Schedule is not specified. Emission credits are based on 56 lots or 1,400 spaces opening up between 1983 and 1987. STATUS: Completed
TCM 9	Expand commute alternatives	Description: Seeks to involve the private sector by encouraging employers to appoint commute coordinators who can disseminate information on commute alternatives. STATUS: Completed
TCM 10	Information program for local government	Description: MTC would develop an information manual to alleviate transportation-related problems. Conduct outreach/training program during FY 1983–84. STATUS: Completed

Continues on next page

TRANSPORTATION CONTROL MEASURES (TCMs) — INCLUDED IN 2001 FEDERAL BAY AREA OZONE ATTAINMENT PLAN

Attachment B

TCM NUMBER	FEDERAL TRANSPORTATION CONTROL MEASURE (TCM)	IMPLEMENTATION STEPS / STATUS
TCM 11	Gasoline Conservation Awareness Program (GasCAP) (A carbon monoxide control strategy; no emission credit taken)	Description: GasCAP was funded by the California Energy Commission, sponsored by Caltrans, and administered by West Valley College. It entailed a training program oriented towards large vehicle fleets to teach proper trip planning, vehicle maintenance, and driving techniques. STATUS: Fully implemented; activities being carried out under a number of independent efforts.
TCM 12	Santa Clara Commuter Transportation Program (A downtown San Jose carbon monoxide control strategy)	Program consists of: • A ridesharing program • Express bus service • Park-and-ride lots • Upgrading of Southern Pacific train service • HOV lanes STATUS: Being implemented
TCM 13	Increase bridge tolls to $1.00 on all bridges	Increase bridge tolls on all state-owned bridges to $1.00 STATUS: Completed
TCM 14	Bay Bridge surcharge of $1.00	Increase Bay Bridge toll to $2.00 to discourage single-occupant automobile use and improve transit STATUS: Completed
TCM 15	Increase state gas tax by 9¢	Raise state gasoline tax from 9 cents to 18 cents per gallon STATUS: Completed
TCM 16	Implement MTC Resolution 1876, Revised — New Rail Starts Agreement (BART extension to Colma only)	This TCM only takes emission credit for the BART extension to Colma. STATUS: Completed; TCM eliminated per EPA action.
TCM 17	Continue October 1989 post-earthquake transit services	Ferry Service: preserve new ferry service initiated after the earthquake. This measure only takes emission credit for the Alameda/Oakland and expanded Vallejo ferry service initiated after the 1989 earthquake. BART: continue expanded peak-period service, including extended hours of peak service on four lines and added trains to the peak period STATUS: Completed
TCM 18	Sacramento-Bay Area Amtrak service	Implement near-term improvements recommended in ACR 132 Rail Study; emission credit is taken for three trains in each direction between Sacramento and the Bay Area. STATUS: Completed
TCM 19	Upgrade Caltrain Peninsula service	Improve existing service by: • Increasing service frequency from 52 trains to 66 trains per day • Extending service to Gilroy STATUS: Completed
TCM 20	Regional HOV System Plan	Expand HOV lane system consistent with the MTC HOV Lane Master Plan (increase HOV system to 285 lane miles) STATUS: Completed
TCM 21	Regional transit coordination	Multiple coordination initiatives are being carried out under MTC's Transit Coordination Implementation Plan, including fare and service coordination. STATUS: Ongoing
TCM 22	Expand Regional Transit Connection (RTC) services	• Expand ongoing MTC program to provide a regional clearinghouse for sale of transit tickets and increased ticket distribution • Emission credits are based on additional subsidy of employee transit tickets and increased ticket distribution. STATUS: Completed

Continues on next page

TRANSPORTATION CONTROL MEASURES (TCMs) — INCLUDED IN 2001 FEDERAL BAY AREA OZONE ATTAINMENT PLAN

Attachment B

TCM NUMBER	FEDERAL TRANSPORTATION CONTROL MEASURE (TCM)	IMPLEMENTATION STEPS / STATUS
TCM 23	Employer audits	• TCM intended to identify high visibility companies that can act as "pacesetters" or models for effective employee Commute Alternatives Programs; build networks for employers/other institutions • Review and enhance programs; provide audit reports to document results STATUS: Completed
TCM 24	Expand signal timing program to new cities	TCM established program to upgrade/retime a specific number of signals. STATUS: Completed
TCM 25	Maintain existing signal timing programs on local streets	MTC will provide technical assistance to local cities in the form of traffic monitoring, design of signal timing plans and limited hardware improvements. STATUS: Ongoing
TCM 26	Incident management on Bay Area freeways	TCM lowers emissions through reduction of incident- and accident-related delays on Bay Area freeways. Emission reductions are assumed from Caltrans' Traffic Operation System for 45-mile "Cornerstone" Project on I-880. STATUS: Completed
TCM 27	Update MTC guidance on development of local Transportation Systems Management (TSM) programs	TCM addresses the development of guidance for local governments on developing TSM programs and ordinances. Emission reductions are for the combined effects of TCM 27 and 28. STATUS: Completed
TCM 28	Local TSM initiatives	Measure accounts for effects of local governments in helping encourage and enhance effectiveness of employer-based efforts. Effects due to: • Improved quality of information on commute alternatives • Improved refinement of incentives to better match employee needs • Improved marketing campaigns • Higher level of market penetration • "Bandwagon effects" in which both employers and employees consider commute alternatives because their peers are doing so Also includes MTC preparation of a Model Trip Reduction Ordinance to be used by cities and counties for employer-based trip reduction programs STATUS: Completed
TCM A	Regional Express Bus Program	Program includes purchase of about 90 low-emission buses to operate new or enhanced express bus services. MTC will approve $40 million in funding to various transit operators for bus acquisition. STATUS: Being implemented
TCM B	Bicycle / Pedestrian Program	Fund $15 million in high-priority projects in countywide plans consistent with TDA funding availability STATUS: Will be implemented, 2003-06
TCM C	Transportation for Livable Communities (TLC)/ Housing Incentive Program	Provide $27 million in planning grants, technical assistance and capital grants to help cities and nonprofit agencies link transportation projects with community plans. STATUS: Will be implemented, 2003-06
TCM D	Additional Freeway Service Patrol	Operation of 55 lane miles of new roving tow truck patrols beyond routes that existed in 2000 STATUS: Being implemented
TCM E	Transit access to airports	Take credit for emission reductions from air passengers who use BART to SFO STATUS: Being implemented; extension under construction

TRANSPORTATION CONTROL MEASURES (TCMs) — TCMs IN STATE CLEAN AIR PLAN

Attachment B

TCM NUMBER	STATE TRANSPORTATION CONTROL MEASURE (TCM)	IMPLEMENTATION STEPS/STATUS
TCM 1	Support voluntary employer-based trip reduction programs	Provide assistance to regional and local ridesharing organizations; advocate legislation to maintain and expand incentives (e.g., tax deductions/credits) Provide assistance to employers, cities, counties: • In developing/enhancing employer programs; recognition of outstanding programs • Information and referral • Employer networks
TCM 2	Adopt employer-based trip reduction rule	TCM DELETED - California Health and Safety Code Sec. 40929 does not permit air districts to require mandatory employer-based trip reduction programs.
TCM 3	Improve areawide transit service	• Increase local bus service as revenues become available • Support transit improvements defined in MTC's Regional Transportation Plan that serve current or planned high-density areas with mixed land uses • Improve transit access to airports • Replace transit buses with clean-fuel buses
TCM 4	Improve regional rail service	• Implement light rail on Third Street (Bayshore Corridor) in San Francisco • Extend Caltrain to downtown San Francisco • Extend Tasman light-rail transit (12 miles, 19 stations) • BART to San Francisco International Airport • Implement light-rail on heavily patronized routes in AC Transit's service area • Implement light-rail expansion in Santa Clara County • Implement new commuter services: Santa Rosa to Larkspur, Vacaville to Oakland • Implement Fremont-South Bay rail connection
TCM 5	Improve access to rail and ferries	• Improve feeder bus service to rail and ferries • Improve bicycle and pedestrian facilities at stations and improve access to rail/ferry stations • Increase private shuttles from transit stations to employment centers • Encourage BART and Caltrain to provide preferential parking for electric vehicles
TCM 6	Improve interregional rail service	• Implement additional interregional rail service in Capitol Corridor (Auburn-Sacramento-Oakland-San Jose) • Implement commuter service between Stockton and San Jose • Expand Amtrak's San Joaquin service between Stockton and Oakland • Implement new commuter service between Santa Cruz and San Jose • Implement new daily service between the Bay Area and Eureka • Consider high-speed rail between downtown San Francisco and Los Angeles
TCM 7	Improve ferry service	• Expand ferry service to San Francisco from Vallejo (two new vessels) and Larkspur (high-speed vessel) • Implement new service from Port Sonoma to San Francisco • Implement new service between San Francisco and Oakland airports
TCM 8	Construct carpool/ express bus lanes on freeways	• Expand existing HOV network, based on MTC HOV Master Plan Update, where beneficial to air quality. Air quality analyses that include growth inducing effects of new highway capacity should be performed for each project. Special attention should be paid to express bus operations to maximize benefits for transit. • Implement HOV support facilities—park-and-ride lots, special HOV ramps that provide direct connections, HOV bypass lanes at ramp meters, express bus service • Monitor vehicle occupancy to maintain travel time advantages and stimulate increased transit use and the formation of new carpools • Convert general purpose lanes to HOV to provide significant time savings for transit

Continues on next page

TRANSPORTATION CONTROL MEASURES (TCMs) — TCMs IN STATE CLEAN AIR PLAN

Attachment B

TCM NUMBER	STATE TRANSPORTATION CONTROL MEASURE (TCM)	IMPLEMENTATION STEPS / STATUS
TCM 9	Improve bicycle access and facilities	• Improve and expand bicycle lane system by providing bicycle access in plans for all new road construction or modifications • Establish and maintain bicycle advisory committees in all nine Bay Area counties • Designate a staff person as a Bicycle Program Manager • Develop and implement comprehensive bicycle plans • Encourage transit operators to accommodate bicycles on transit vehicles, including removal of peak-hour restrictions • Encourage Caltrans to accommodate bicycles on all bridges, including the San Francisco-Oakland Bay Bridge • Encourage employers and developers to provide bicycle access and facilities (see also TCM 15) • Provide bicycle safety education
TCM 10	Youth transportation	• Encourage carpooling among students with access to cars • Replace school buses with clean-fuel vehicles • Offer transit ride discounts to youth and students • Establish special carpool formation services for parents, students and staff at Bay Area elementary and secondary schools
TCM 11	Install freeway/arterial Metro Traffic Operations System (MTOS)	• Continue and expand Freeway Service Patrol • Complete initial 45-mile segment of MTOS (MTOS includes transportation operational strategies, traffic surveillance, traffic advisory signs, incident management, ramp metering), subject to a demonstration of air quality benefits • Define and implement traffic operations system to improve the flow of traffic on the regional transportation network
TCM 12	Improve arterial traffic management	• Study signal preemption for buses on arterials with high volumes of bus traffic • Improve arterials for bus operations and to encourage bicycling and walking • Continue and expand local signal-timing programs only where air quality benefits can be demonstrated
TCM 13	Transit-use incentives	• Expand Regional Transit Connection (RTC) ticket distribution through employers, and continue "Commuter Check" program for employers to subsidize employee transit passes • Construct transit centers identified in AC Transit's Comprehensive Service Plan • TransLink® (universal fare card) on AC Transit, BART, Central Contra Costa Transit Authority, Golden Gate Transit, Livermore/Amador Valley Transit Authority and San Francisco Muni • Develop transit incident-response plan • Provide selective fare reductions: reduced off-peak fares, reduced fares for special events, reduced fares for lines with excess capacity, downtown free fare zones, etc.
TCM 14	Improve rideshare/vanpool services and incentives	• Develop long-term funding plan for Regional Ridesharing Program • Implement Traffic Management Programs that promote ridesharing and vanpooling • Explore potential demand for medium-distance (20-30 miles) vanpools and develop incentives for this market if demand exists • Explore potential demand for real-time ridesharing
TCM 15	Local clean air plans, policies and programs	• Encourage cities and counties to incorporate air-quality-beneficial policies and programs into local planning and development activities, with a particular focus on subdivision, zoning and site design measures that reduce the number and length of single-occupant automobile trips • Develop subregional planning pilot projects • Provide technical assistance to local government agencies • Publicize noteworthy examples of local clean air plans, policies and programs, as well as endorse noteworthy development projects

Continues on next page

TRANSPORTATION CONTROL MEASURES (TCMs) — TCMs IN STATE CLEAN AIR PLAN

Attachment B

TCM NUMBER	STATE TRANSPORTATION CONTROL MEASURE (TCM)	IMPLEMENTATION STEPS / STATUS
TCM 16	Intermittent control measure/public education	• Encourage public to reduce motor vehicle use and other polluting activities on predicted ozone exceedance days through "Spare the Air" program • Continue public education program to inform Bay Area residents about status of regional air quality, health effects of air pollution, sources of pollution and measures that individuals and communities can take to help improve air quality • Continue and expand the Bay Area Clean Air Partnership (BayCAP), focusing on voluntary actions by employers to improve air quality
TCM 17	Conduct demonstration projects	Promote demonstration projects to develop new strategies to reduce motor vehicle emissions. Potential projects include: • Electronic toll collection • Low-Emission Vehicle (LEV) fleets • LEV refueling infrastructure
TCM 18	Transportation pricing reform	Advocate legislation for authority to develop and promote revenue measures: • Congestion pricing on bridges • Parking cash out • Parking charges at rail stations • Regional gas tax of $0.10 • Regional gas tax of $0.50 • Regional gas tax of $2.00 • Smog-based registration fees • New vehicle "feebates" Use revenues to fund transportation alternatives, user incentives and equity programs
TCM 19	Pedestrian travel	• Review/revise general/specific plan policies to promote development patterns that encourage walking and circulation policies that emphasize pedestrian travel, and modify zoning ordinances to include pedestrian-friendly design standards • Include pedestrian improvements in capital improvements program • Designate a staff person as a Pedestrian Program Manager
TCM 20	Promote traffic-calming measures	• Include traffic-calming strategies in the transportation and land-use elements of general and specific plans • Include traffic-calming strategies in capital improvements programs

Appendix F

CMP Monitoring Report

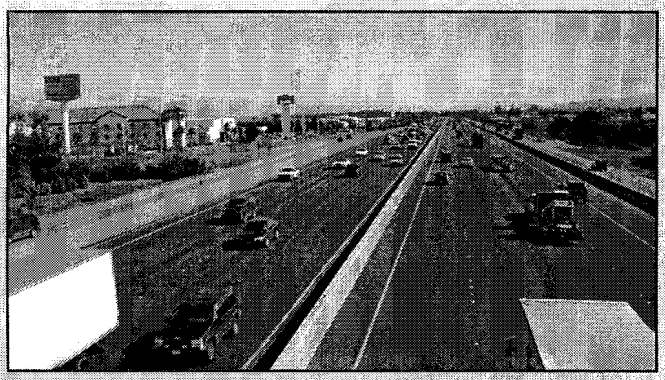
Status of Capital Improvement Projects

Measure A Projects

San Mateo County

Congestion Management Program

2003 Monitoring Report



PREPARED FOR:

City/County Association of Governments of San Mateo County

PREPARED BY:

FEHR & PEERS
TRANSPORTATION CONSULTANTS

July 29, 2003

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. INTRODUCTION

This chapter discusses the purpose and organization of this report.

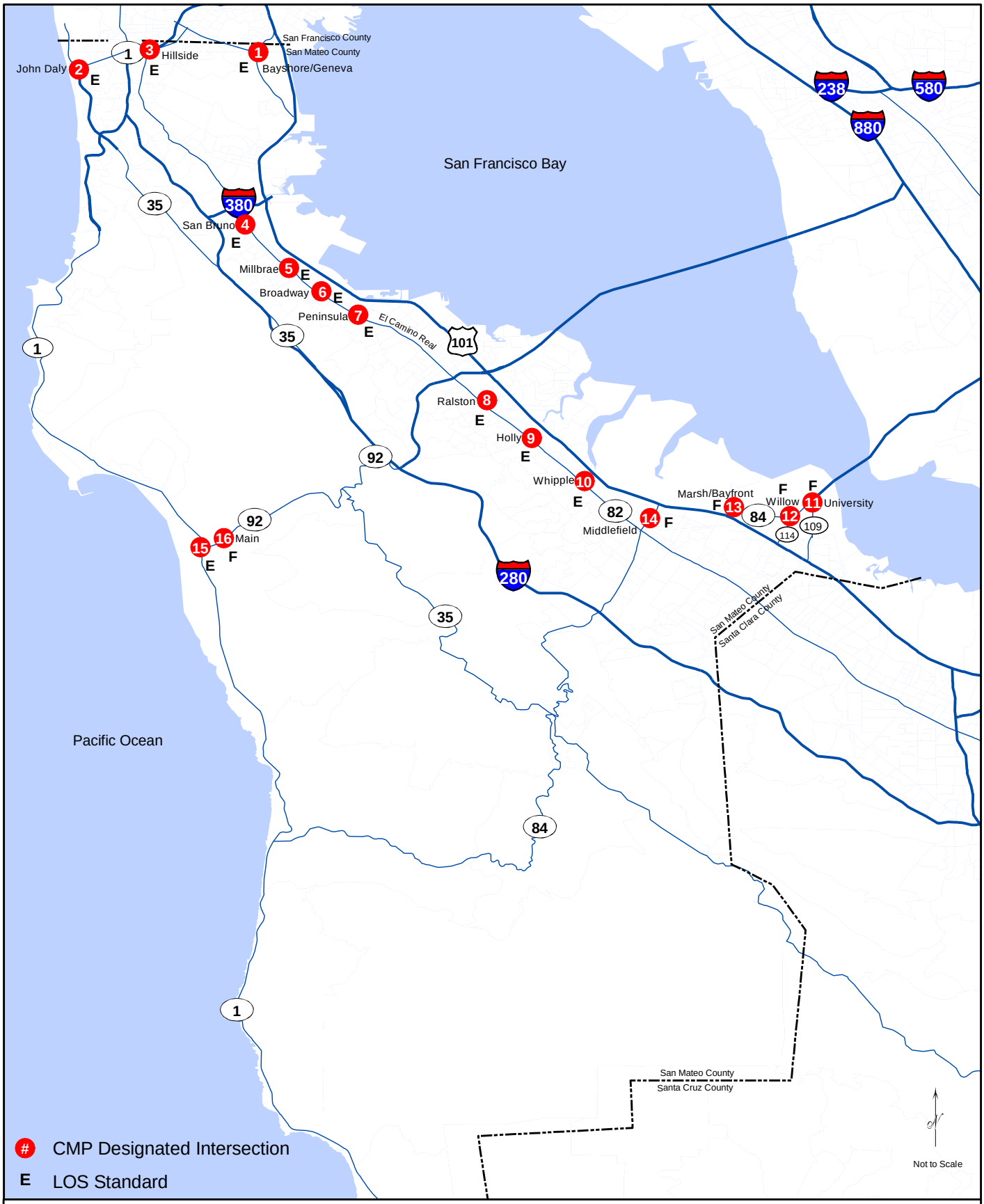
A. Study Purpose

The roadway segments and 16 intersections that comprise the CMP Roadway System in San Mateo County were monitored to determine compliance with the adopted Traffic Level of Service (LOS) Standards. C/CAG has adopted a biennial schedule for monitoring the CMP Roadway System. The locations of the CMP intersections and roadway segments and their LOS standards are shown on Figures 1 and 2, respectively.

B. Report Organization

This report is divided into four chapters as described below:

- ***Chapter I - Introduction*** discusses the purpose and organization of this report.
- ***Chapter II - 2003 Monitoring Program*** contains the results of the 2003 monitoring program for the study roadway segments and intersections.
- ***Chapter III - Performance Measures*** presents the results of the Performance Measure Element. Four Performance Measures were monitored: (1) level of service, (2) travel times for single-occupant automobiles, carpools, and transit, (3) pedestrian and bicycle improvements, and (4) ridership/person throughput for transit.
- ***Chapter IV - Summary*** presents a summary of the 2003 monitoring results.

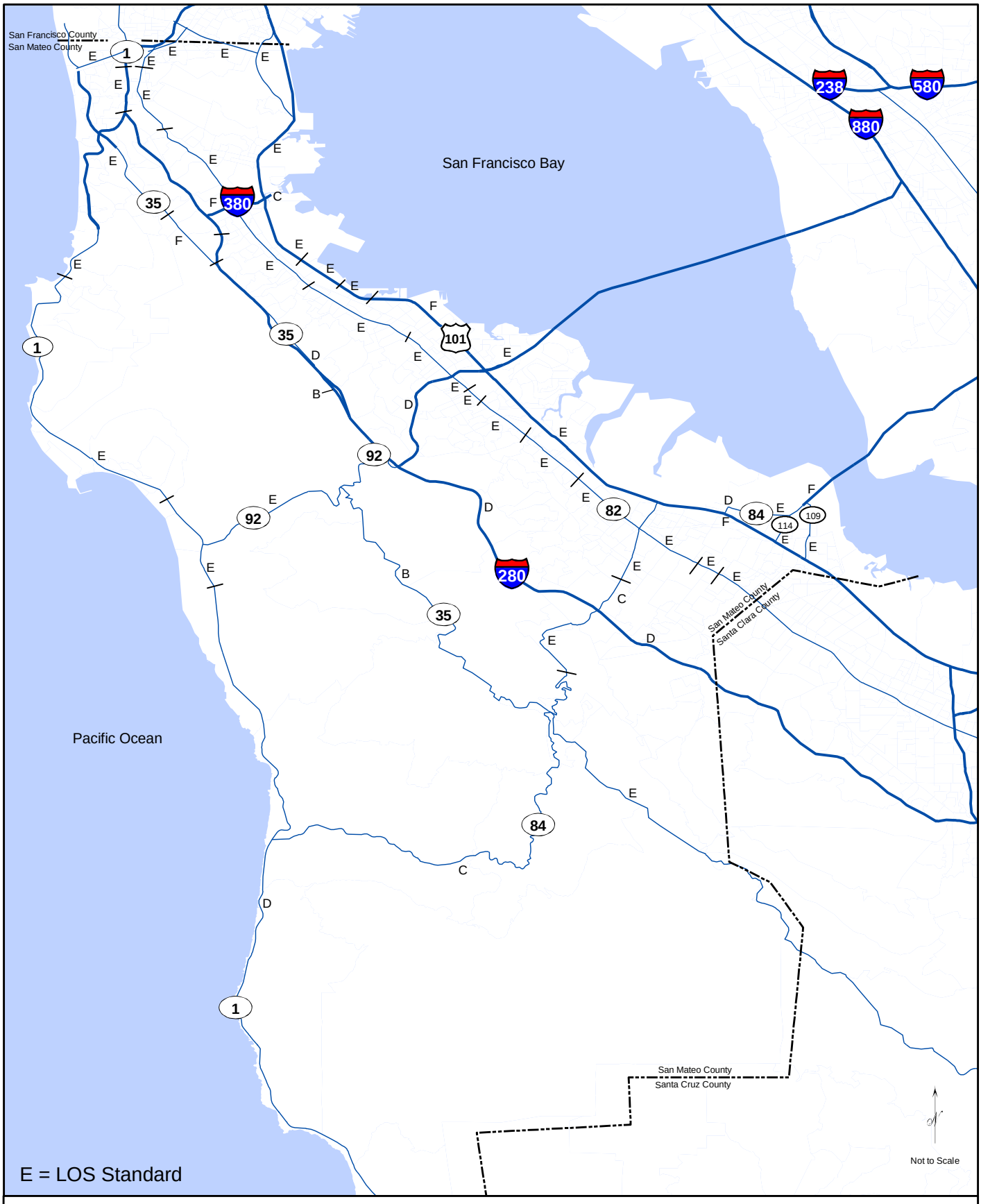


FEHR & PEERS
TRANSPORTATION CONSULTANTS

2003 CMP Monitoring Report

CMP Intersections and LOS Standards

Figure 1



2003 CMP Monitoring Report

CMP Roadway Segments and LOS Standards

Figure 2

FEHR & PEERS
TRANSPORTATION CONSULTANTS

II. 2003 MONITORING PROGRAM

The results of the 2003 monitoring effort are presented in this chapter.

A. Traffic Volumes

Current (2003) traffic volumes for the CMP Roadway System were obtained from local agencies. Locations where recent counts were not available were identified, and new counts or travel time surveys were conducted. Roadway segment volumes were measured with 3-day (72-hour) machine counts. Travel time surveys were conducted on freeways during the AM (7:00 to 9:00 am) and PM (4:00 to 7:00 pm) peak periods.[1] Manual turning-movement counts were conducted at intersections during the AM (7:00 to 9:00 am) and PM (4:00 to 6:00 pm) peak periods. The results of the counts and travel time surveys are contained in the Appendix A.

B. Levels of Service

Levels of service were calculated for each roadway segment and intersection using the methodologies presented in Appendix B of the San Mateo County CMP. The results are discussed below.

1. Roadway Segments

The LOS standards for the roadway segments are illustrated on Figure 2. Level of service calculations were conducted for the roadway segments using the 2003 traffic volumes and average speeds (estimated from the travel time surveys conducted on freeway segments). Different calculation methods are used for different types of facilities. For some facilities, e.g. rural highways, the level of service is based on the operation of the entire segment (both directions combined). On other types of roadways, each direction is evaluated separately. The segment and directional LOSs for the AM and PM peak hours are presented in the Appendix B. The worst operations for each segment are presented in Table 1 and illustrated on Figure 3. This table also presents the results of the 1995, 1997, 1999, and 2001 monitoring programs.

Level of service calculations were first conducted without including any reductions in traffic volumes to account for exemptions required by the CMP legislation. Segments that operate better than the LOS standard without the reductions are automatically in compliance. Reductions were applied to the segments whose 2003 level of service exceeded the segment's standard. Reductions for interregional travel on each segment were based on the C/CAG travel demand forecasting model's estimation of the percent of Year 2000 traffic volumes originating outside of San Mateo County. At locations that were monitored with traffic counts, these reductions were applied directly to the measured traffic volumes, a new adjusted volume-to-capacity (V/C) ratio was computed, and the level of service was revised accordingly. At locations that were monitored using travel time surveys, the average speeds were first converted to V/C ratios based on the ranges of V/C ratios and speeds for the corresponding level of service range (from the level of service definition tables in Appendix B of the CMP). Interpolation was used to convert the speed to a specific V/C ratio. For LOS F, the maximum V/C ratio was assumed to be 1.10. The reduction for interregional trips was applied to the V/C ratio to determine the level of service without these trips. (This methodology is consistent with previous monitoring reports.)

[1] Congestion of the freeway segments was observed to still be increasing at 6:00 pm during the travel time surveys conducted for the 1999 Monitoring Program. Therefore, the travel time surveys for the 2001 and 2003 Monitoring Program were conducted until 7:00 pm.

Table 1

2003 CMP Roadway Segment Levels of Service

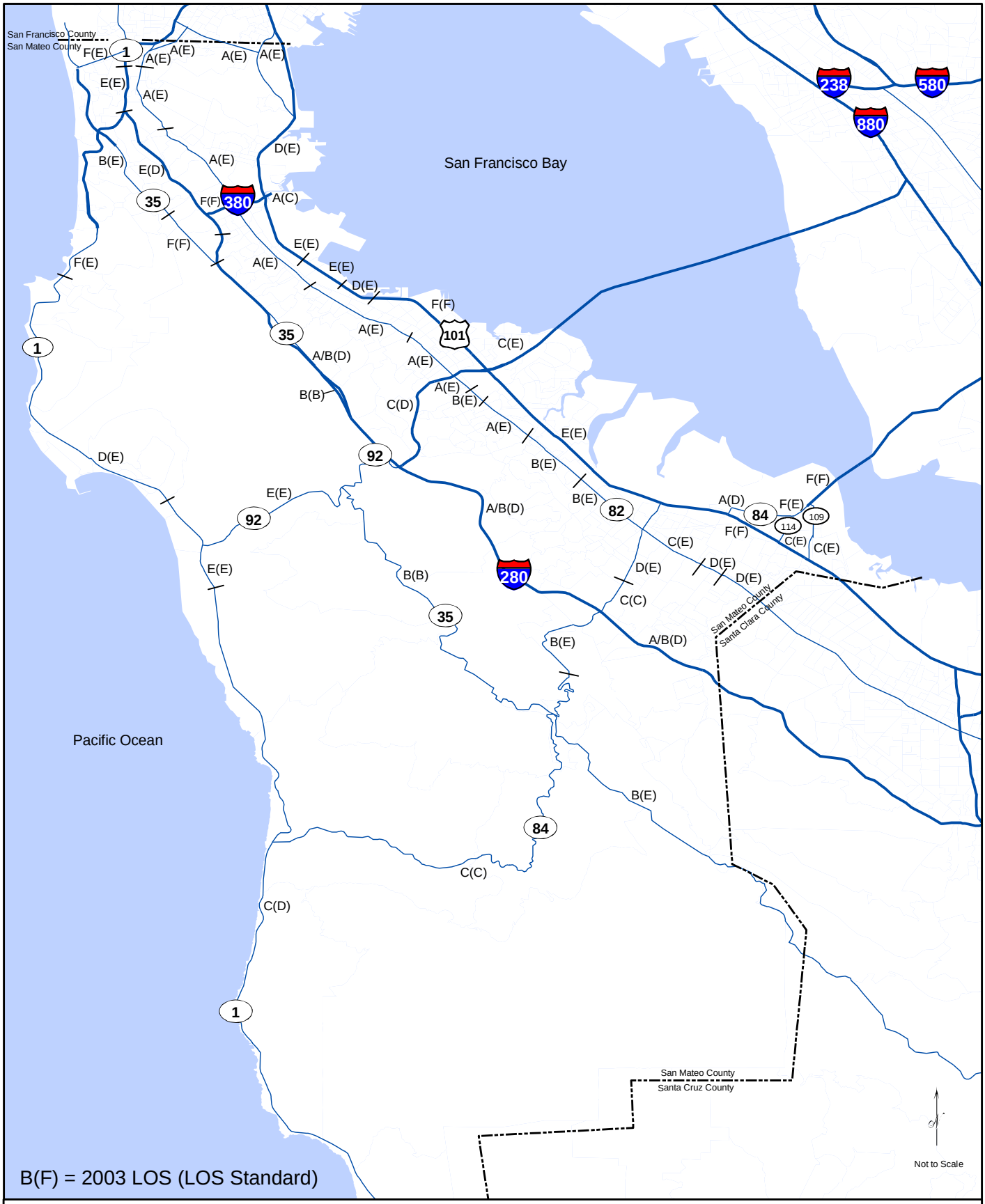
Route	Roadway Segment	LOS Standard[1]	2003 LOS		2001 LOS[2]	1999 LOS[2]	1997 LOS[3]	1995 LOS
			Without Exemptions	With Exemptions				
1	San Francisco County Line to Linda Mar Blvd.	E	F[4]	F[5]	F[4]/F[5]	F[4]/F[5]	N.M.	C
1	Linda Mar Blvd. to Frenchmans Creek Rd.	E	D	N/A	D	D	C	E
1	Frenchmans Creek Road to Miramontes Road	E	E	N/A	F/E	E	B	E
1	Miramontes Road to Santa Cruz County Line	D	C	N/A	C	C	B	B
35	San Francisco County Line to Sneath Lane	E	B	N/A	B	A	C	A
35	Sneath Lane to I-280	F	F	N/A	F	F	N.M.	N.M.
35	I-280 to SR 92	B	C	B	C/B	C/B	A	A
35	SR 92 to SR 84	B	B	N/A	B	B	A	A
35	SR 84 to Santa Clara County Line	E	B	N/A	B	B	A	A
82	San Francisco County Line to John Daly Blvd.	E	A	N/A	A	A	A	A
82	John Daly Boulevard to Hickey Boulevard	E	A	N/A	A	A	A	A
82	Hickey Boulevard to I-380	E	A	N/A	A	B	B	A
82	I-380 to Trousdale Drive	E	A	N/A	A	A	A	A
82	Trousdale Drive to 3rd Avenue	E	A	N/A	A	A	B	B
82	3rd Avenue to SR 92	E	A	N/A	A	A	A	A
82	SR 92 to Hillsdale Avenue	E	A	N/A	A	B	A	A
82	Hillsdale Avenue to 42nd Avenue	E	B	N/A	B	B	E	A
82	42nd Avenue to Holly Street	E	A	N/A	A	A	C	A
82	Holly Street to Whipple Avenue	E	B	N/A	B	D	B	A
82	Whipple Avenue to SR 84	E	B	N/A	B	C	D	B
82	SR 84 to Glenwood Avenue	E	C	N/A	B	B	A	B
82	Glenwood Avenue to Santa Cruz Avenue	E	D	N/A	C	C	D	B
82	Santa Cruz Ave. to Santa Clara County Line	E	D	N/A	C	C	D	C
84	SR 1 to Portola Road	C	C	N/A	D/D	D/C	B	B
84	Portola Road to I-280	E	B	N/A	D	B	C	C
84	I-280 to Alameda de las Pulgas	C	D	C	D/D	D/D	D	A
84	Alameda de las Pulgas to US 101	E	D	N/A	E	F/C	D	C
84	US 101 to Willow Road	D	E	A	F/E	D	D	F
84	Willow Road to University Avenue	E	F	F	F/F	F/F	E	E

Table 1 Cont.

2003 CMP Roadway Segment Levels of Service

Route	Roadway Segment	LOS Standard[1]	2003 LOS		2001 LOS[2]	1999 LOS[2]	1997 LOS[3]	1995 LOS
			Without Exemptions	With Exemptions				
84	University Avenue to Alameda County Line	F	F	N/A	F	F	F	F
92	SR 1 to I-280	E	E	N/A	E	E	D	E
92	I-280 to US 101	D	C[4]	N/A	E[4]/E[5]	F[4]/E[5]	**E**	E
92	US 101 to Alameda County Line	E	C[4]	N/A	F[4]/F[5]	F[4]/F[5]	**F**	E
101	San Francisco County Line to I-380	E	D[4]	N/A	E[4]	F[4]/E[5]	D	D
101	I-380 to Millbrae Avenue	E	F[4]	E[5]	F[4]/C[5]	F[4]/D[5]	C	E
101	Millbrae Avenue to Broadway	E	F[4]	E[5]	F[4]/E[5]	F[4]/E[5]	**F**	F
101	Broadway to Peninsula Avenue	E	F[4]	D[5]	F[4]/E[5]	F[4]/D[5]	**F**	E
101	Peninsula Avenue to SR 92	F	F[4]	N/A	F[4]	F[4]	F	F
101	SR 92 to Whipple Avenue	E	F[4]	E[5]	F[4]/E[5]	F[4]/E[5]	D	D
101	Whipple Avenue to Santa Clara County Line	F	F[4]	N/A	F[4]	F[4]	F	F/D
109	Kavanaugh Drive to SR 84 (Bayfront Expwy.)	E	C	N/A	E	E	A	A
114	US 101 to SR 84 (Bayfront Expressway)	E	C	N/A	D	D	E	E
280	San Francisco County Line to SR 1 (north)	E	F[4]	**F[5]**	F[4]/F[5]	F[4]/F[5]	D	A
280	SR 1 (north) to SR 1 (south)	E	E[4]	N/A	E[4]	F[4]/F[5]	**F**	B
280	SR 1 (south) to San Bruno Avenue	D	F[4]	**E[5]**	F[4]/E[5]	F[4]/E[5]	**E**	F
280	San Bruno Avenue to SR 92	D	A/B[4]	N/A	A/B[4]	D	D	A
280	SR 92 to SR 84	D	A/B[4]	N/A	D[4]	E[4]/D[5]	C	C
280	SR 84 to Santa Clara County Line	D	A/B[4]	N/A	D[4]	E[4]/E[5]	D	A
380	I-280 to US 101	F	F[4]	N/A	F[4]	F[4]	F	E
380	US 101 to Airport Access Road	C	A[4]	N/A	C[4]	C[4]	C	A
Mission St.	San Francisco County Line to SR 82	E	A	N/A	A	A	A	A
Geneva Ave.	San Francisco County Line to Bayshore Blvd.	E	A	N/A	A	A	A	C
Bayshore Blvd.	San Francisco County Line to Geneva Avenue	E	A	N/A	A	A	A	A

Notes:
[1] From "Final Congestion Management Program 1997," Table 3-2.
[2] For 1999 and 2001 LOS, the first value represents LOS without exemptions, and the second value represents LOS with exemptions.
[3] From 1997 monitoring report.
[4] Based on average speed from travel time surveys.
[5] Exemptions applied to V/Cs estimated from average speeds.
N.M.=not monitored.
N/A=not applicable. LOS standard is not violated. Therefore, exemptions were not applied.
LOS Standard violations (after application of exemptions) are indicated in bold.



2003 CMP Monitoring Report

2003 CMP Roadway Segments LOS

Figure 3

FEHR & PEERS
TRANSPORTATION CONSULTANTS

a. Improvements

The following list describes improvement projects that have been completed or are under construction since the 2001 Monitoring Program. The completed projects were incorporated into the LOS calculations:

- U.S. 101 Auxiliary lanes in each direction between Ralston Avenue and Hillsdale Boulevard (completed in Summer 2002)
- Widening of the San Mateo Bridge from the eastern end to the toll plaza from four to six lanes (completed in 2003).
- U.S. 101 Auxiliary lanes in each direction from Marsh Road to Ralston Avenue (under construction – estimated completion date of Summer 2004)

b. Roadway Segment Results

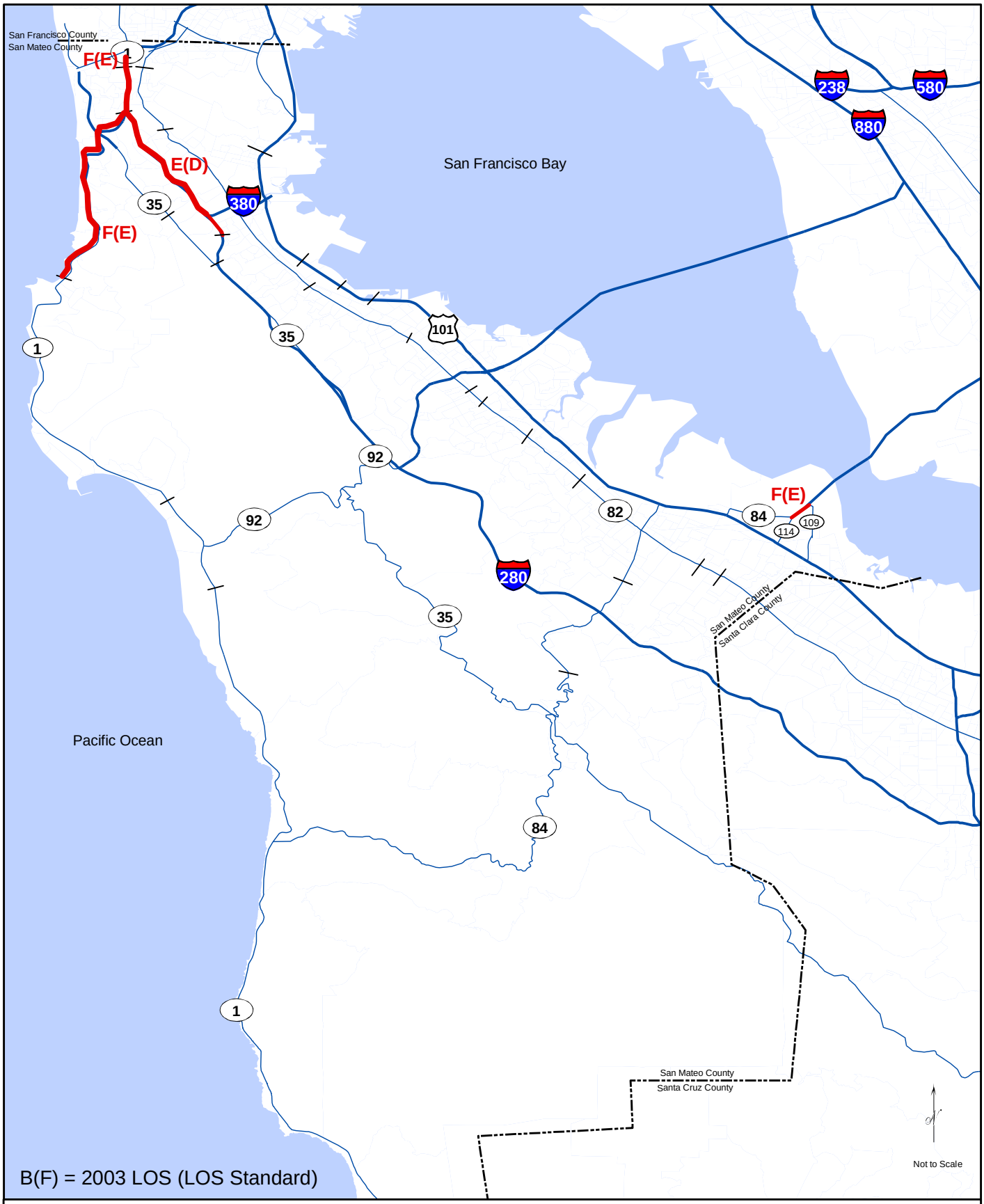
The results indicate that four of the 53 roadway segments are in violation of the LOS Standard in 2003. These locations are illustrated on Figure 4 and listed below:

- SR 1, San Francisco County Line to Linda Mar Boulevard
- SR 84, Willow Street to University Avenue
- I-280, San Francisco County Line to SR 1 (north)
- I-280, SR 1 (south) to San Bruno Avenue

These four segments also violated their standard in 2001. The following five roadway segments that violated the LOS Standard in 2001 were found not to be in violation in 2003:

- SR 84, SR 1 to Portola Road
- SR 84, I-280 to Alameda de las Pulgas
- SR 84, US 101 to Willow Street
- SR 92, I-280 to US 101
- SR 92, US 101 to Alameda County Line

These five segments are operating at LOS D or better. Widening of SR 92 bridge and the observed decrease in traffic volumes due to the economic downturn may have contributed to the improved levels of service at these locations.



FEHR & PEERS
TRANSPORTATION CONSULTANTS

2003 CMP Monitoring Report

Deficient CMP Roadway Segments

Figure 4

2. Intersections

The 2003 traffic volumes, lane configurations, and signal phasings were used as inputs to the intersection level of service calculations. No reductions for inter-regional travel were applied to the intersection volumes. The results of the LOS calculations are presented in Table 2. This table also presents LOS results from previous monitoring reports for comparison purposes. The 2003 intersection levels of service and LOS standards are illustrated on Figure 5. Appendix D contains the level of service calculation worksheets.

a. Improvements

Widening SR 84 between Marsh Road and Dumbarton Bridge to three lanes in each direction is currently under construction. The scheduled completion date is October 2003. Widening of SR 84 would change the lane configuration at the following intersections:

Bayfront Expressway (SR 84)/University Avenue

The northbound approach would provide two left-turn lanes and three right-turn lanes. A third eastbound through lane will be added.

Bayfront Expressway (SR 84)/Willow Road

A second left-turn lane will be added to the northbound and eastbound approaches. A third through lane will be added to the eastbound and westbound approaches and an exclusive eastbound right-turn lane will be provided.

Bayfront Expressway (SR 84)/Marsh Road

An exclusive through lane will be added to the eastbound approach and a third westbound left-turn lane will be provided on the westbound approach.

b. Intersection Results

The results of the intersections level of service calculations indicate that the LOS ratings change (improved or worsened) at the following locations:

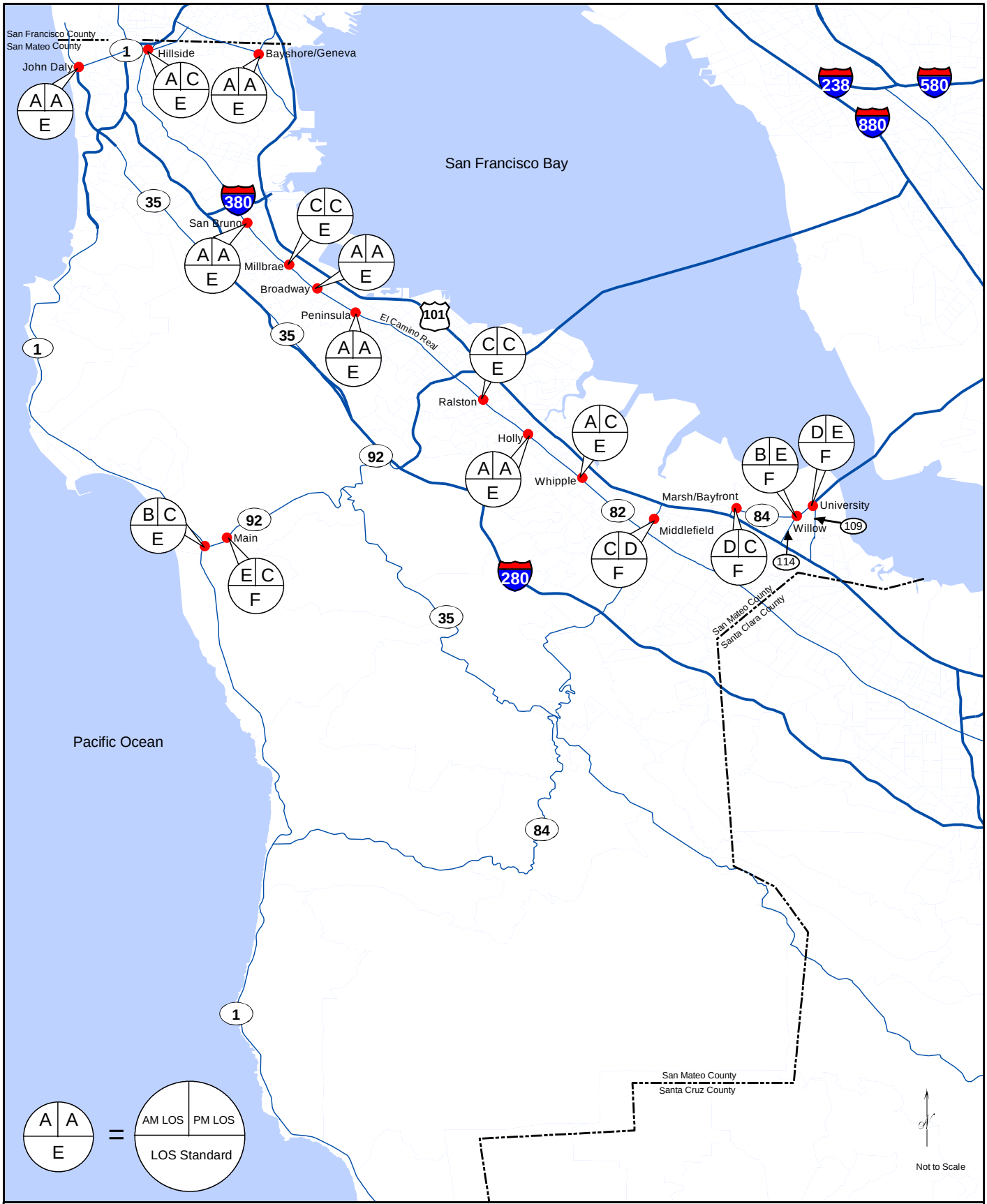
- Mission Street (SR 82)/John Daly Boulevard/Hillsdale Boulevard (AM LOS improved from LOS B to LOS A, PM LOS worsened from LOS B to LOS C)
- El Camino Real (SR 82)/Millbrae Avenue (PM LOS improved from LOS D to LOS C)
- El Camino Real (SR 82)/Broadway (AM LOS improved from LOS B to LOS A)
- El Camino Real (SR 82)/Ralston Avenue (PM LOS improved from LOS D to LOS C)
- El Camino Real (SR 82)/Holly Street (PM LOS improved from LOS B to LOS A)
- El Camino Real (SR 82)/Whipple Avenue (PM LOS worsened from LOS A to LOS C)
- Bayfront Expressway (SR 84)/Willow Road (PM LOS improved from LOS F to LOS E)
- Bayfront Expressway (SR 84)/Marsh Road (AM LOS improved from LOS E to LOS D, PM LOS improved from LOS D to LOS C)
- SR 92/SR 1 (AM LOS worsened from LOS A to LOS B, PM LOS worsened from LOS B to LOS C)
- SR 92/Main Street (PM LOS worsened from LOS D to LOS E)

Table 2

2003 CMP Intersection Levels of Service[1] and Standards

Intersection	LOS Standard	Peak Hour	2003 LOS	2001 LOS	1999 LOS	1997 LOS[2]	1995 LOS	Standard Exceeded?
Geneva Ave./ Bayshore Blvd.	E	AM	A	A	A	A	A	No
		PM	A	A	A	A	A	No
Skyline Blvd (SR 35)/ John Daly Blvd.	E	AM	A	A[3]	A	A	A	No
		PM	A	A[3]	A	B	A	No
Mission St. (SR 82)/ John Daly Blvd.- Hillsdale Blvd.	E	AM	A	B[3]	A	A	A	No
		PM	C	B[3]	A	A	A	No
El Camino Real (SR 82)/ San Bruno Ave.	E	AM	A	A[3]	A	B	C	No
		PM	A	A[3]	C	C	A	No
El Camino Real (SR 82)/ Millbrae Ave.	E	AM	C	C	D	C	B	No
		PM	C	D	B	B	C	No
El Camino Real (SR 82)/ Broadway.	E	AM	A	B	B	B	A	No
		PM	A	A	A	B	A	No
El Camino Real (SR 82)/ Park-Peninsula Ave.	E	AM	A	A	A	A	A	No
		PM	A	A	A	B	A	No
El Camino Real (SR 82)/ Ralston Ave.	E	AM	C	C[3]	B	B	C	No
		PM	C	D[3]	C	E	D	No
El Camino Real (SR 82)/ Holly St.	E	AM	A	A[3]	A	B	A	No
		PM	A	B[3]	B	C	B	No
El Camino Real (SR 82)/ Whipple Ave.	E	AM	A	A	A	B	A	No
		PM	C	A	D	C	B	No
Bayfront Expwy. (SR 84)/ University Ave. (SR 109)	F	AM	D	D[3]	C	F/D	D	No
		PM	E	E[3]	F	D	F	No
Bayfront Expwy. (SR 84)/ Willow Rd.	F	AM	B	B	C	F/E	F	No
		PM	E	F	F	F	C	No
Bayfront Expwy. (SR 84)/ Marsh Rd.	F	AM	D	E	D	F/E	E	No
		PM	C	D	F	F	F	No
Woodside Rd. (SR 84)/ Middlefield Rd.	F	AM	C	C	E	F	D	No
		PM	D	D	E	F	D	No
SR 92/ SR 1	E	AM	B	A[3]	B	B	B	No
		PM	C	B[3]	C	B	A	No
SR 92/ Main St.	F	AM	E	D	C	D/C	F	No
		PM	C	C	B	D/C	D	No

Notes:
[1] Level of service based on volume-to-capacity ratio using Transportation Research Board's Circular 212 planning methodology for signalized intersections.
[2] For those intersections with two levels of service ratings, the first rating is the published 1997 result and the second rating is the corrected 1997 result.
[3] Lane configuration changed from 1999 to 2001 due to lane improvements.



2003 CMP Monitoring Report

2003 CMP Intersection Levels of Service (LOS)

Figure 5

FEHR & PEERS
TRANSPORTATION CONSULTANTS

All study intersections are operating at levels of service better than their LOS standard and no LOS Standard violations were identified. Field observations were conducted at the study intersections to verify the calculated levels of service. In general, most of the CMP intersections are operating at good levels of service. The calculated level of service ratings indicated that several locations are operating at LOS A or B based on volume-to-capacity ratios. Field observations indicated that these locations were observed to operate at one level of service grade lower (i.e. B or C) based on vehicular delay.

III. PERFORMANCE MEASURES

In 1995, the Transit LOS Standard Element was replaced with the Performance Measure Element. Four Performance Measures were selected and refined in the 1997 CMP Update and retained for the 1999, 2001, and 2003 CMPs. The four measures are: (1) level of service, (2) travel times for single-occupant automobiles, carpools, and transit, (3) pedestrian and bicycle improvements, and (4) ridership/person throughput for transit. This chapter presents 2003 measurements of these performance measures.

A. Level of Service

The levels of service of the designated CMP roadway system were evaluated as part of the 2003 monitoring effort. The results are presented in Chapter 2. The results show that four roadway segments are in violation of their LOS standard. All of the intersections are in compliance with their LOS standard.

B. Travel Times for Single-Occupant Automobiles, Carpools, and Transit

This performance measure is based on the amount of time required to traverse a selected corridor via the various modes. Travel times were measured for the U.S. 101 corridor between the San Francisco and Santa Clara County Lines. The U.S. 101 corridor was selected because, in addition to mixed-flow lanes, it includes High Occupancy Vehicle (HOV) lanes, bus routes, and passenger rail.

Travel time surveys conducted on U.S. 101 for the CMP traffic level of service monitoring process were used to represent travel times for single-occupant automobiles. Travel time surveys were also conducted for the HOV lanes on U.S. 101, which currently extend from the Santa Clara County Line to Whipple Avenue. (The results are summarized in Appendix A). The total travel time for carpools was estimated by adding the travel time in the HOV lanes between the Santa Clara County Line and Whipple Avenue to the travel time in the mixed-flow lanes between Whipple Avenue and the San Francisco County Line.

Travel times for bus and passenger rail modes were estimated based on SamTrans and Caltrain published schedules. SamTrans bus route KX operates in the U.S. 101 corridor. This route provides service through San Mateo County from San Francisco to Palo Alto. Travel times were based on the average travel time between County lines during the commute hours.[2] Travel time via Caltrain was calculated in a similar manner. The transit travel time calculations are included in Appendix C.

The travel times for each mode, by direction and peak commute period, are presented in Table 3. This table also presents the 1999 and 2001 travel times. The 2003 travel times for the single-occupant auto and carpool decreased by twelve minutes in the southbound direction during the morning period and increased by four-to-eight minutes in the northbound and southbound direction during the evening period when compared to 2001 travel times. The travel time runs for Caltrain and the SamTrans bus route are consistent with the 2001 times.

[2] Defined as 7:00 am to 9:00 am and 4:00 pm to 7:00 pm.

Table 3

Average Travel Time in U.S. 101 Corridor
(in Minutes)[1]

Mode	AM[2]						PM[3]					
	Northbound			Southbound			Northbound			Southbound		
	1999	2001	2003	1999	2001	2003	1999	2001	2003	1999	2001	2003
Single-Occupant Auto	29	27	29	45	49	37	38	31	39	31	26	30
Carpool	29	25	28	40	38	29	36	31	34	28	25	25
Caltrain	42	44	43	45	48	49	46	49	49	42	45	46
SamTrans Route KX	61	66	68	68	76	74	71	75	75	63	71	72

Notes: [1] Between San Francisco and Santa Clara County Lines.
[2] Morning commute period.
[3] Evening commute period.

C. Pedestrian and Bicycle Improvements

The purpose of this measure is to ensure that pedestrian and bicycle travel is being accommodated in new transportation improvement projects. During the CMP update process, seven-year Capital Improvement Program (CIP) projects are identified and evaluated. The top-ranked projects are forwarded on to MTC to be evaluated in the regional process for State and Federal funding.

CIP projects that include pedestrian and bicycle improvements should receive higher priority over those that do not. In addition, projects that cause a barrier to pedestrian or bicycle travel should receive a penalty in the evaluation process. (Barriers would include grade separations with no pedestrian or bicycle provisions.) This can be accomplished by adding pedestrian/bicycle transportation issues to the evaluation criteria. For example:

Does the CIP project include sidewalks or pedestrian paths? (+ points)
Do the CIP project's sidewalks or paths connect with other pedestrian facilities? (++ points)
Do the CIP project's sidewalks or paths close a gap in the pedestrian system? (+++ points)
Does the CIP project cause a barrier to pedestrian travel? (- points)

Does the CIP project include bike lanes or bike paths? (+ points)
Do the CIP project's bicycle facilities connect with other bicycle facilities? (++ points)
Do the CIP project's bicycle facilities close a gap in the regional bicycle system? (+++ points)
Does the CIP project cause a barrier to bicycle travel? (- points)

The actual number of added or subtracted points is dependent the points given for other criteria. San Mateo County publishes the Bicycle Transportation Map which identifies existing bicycle facilities in San Mateo County. This map would be helpful in identifying gaps in the bicycle system. According to County staff, the next CIP program will use bicycle and pedestrian accommodations in the evaluation criteria.

D. Ridership/Person Throughput for Transit

The purpose of this performance measure is to measure the number of individuals that use transit. Available SamTrans, Caltrain, and BART ridership data was collected and is presented in Table 4. These average weekday ridership numbers were compared to 1999 and 2001 conditions.

Between 1999 and 2001, SamTrans total ridership increased by approximately 70,000 passengers, Caltrain total ridership increased by approximately 1.9 million passengers, and BART total ridership increased by 1.5 million passengers. Between 2001 and 2003, SamTrans, Caltrain, and BART total ridership decreased by 1.8 million, 2.2 million, and 600,000 passengers, respectively. The average weekday ridership for SamTrans was constant at 60,000 passengers between 1999 and 2001 and decreased to 52,800 passengers in 2003. Average weekday ridership for Caltrain increased by 6,000 passengers to 32,900 passengers between 1999 and 2001 and decreased to 27,800 passengers in 2003. BART average weekday ridership increased from 25,800 in 1999 to 29,500 passengers in 2001 and decreased to 27,300 passengers in 2003.

As a performance measure, average weekday ridership could be compared to the capacity of each mode. Capacity would be estimated by determining the average number of train cars and buses per weekday and the number of seats on each. The capacity for each mode would then be calculated by multiplying the person-capacity of each vehicle (number of seats for each bus or train car) by the number of vehicles per weekday. The crush load capacity would be calculated by adding in standees, typically estimated as 50 percent of the seats.

Table 4

Transit Ridership[1]

Mode	Total			Average Weekday		
	1999[2]	2001[3]	2003[4]	1999	2001	2003
SamTrans	17,885,754	17,958,419	16,203,500	60,323	60,040	52,845
Caltrain	8,621,841	10,509,567	8,283,062	26,861	32,865	27,785
BART (Colma & Daly City)	7,258,562	8,807,348	8,192,364	25,787	29,503	27,323

Notes:
[1] Ridership information provided by SamTrans.
[2] Based on Fiscal Year ending June 30, 1999.
[3] Based on Fiscal Year ending June 30, 2001.
[4] Based on Fiscal Year ending June 30, 2003.

IV. SUMMARY

A. Roadway segments

Level of service calculations were conducted for the roadway segments using the 2003 traffic volumes and average speeds (estimated from the travel time surveys conducted on freeway segments). The results indicate that four of the 53 roadway segments are in violation of the LOS Standard in 2003.

B. Intersections

The results of the intersection LOS calculations indicated that the level of service ratings improved or decreased at ten (10) locations in comparison to the 2001 results. However, all study intersections are operating at levels of service better than their LOS standard and no LOS Standard violations were identified.

C. Performance Measures

1. Travel Times for Single-Occupant Automobiles, Carpools, and Transit

Travel times were measured for the U.S. 101 corridor between the San Francisco and Santa Clara County Lines for single-occupant automobiles, carpools, and transit and compared to 1999 and 2001 travel times. The 2003 travel times for the single-occupant auto and carpool decreased by nine-to-ten minutes in the southbound direction during the morning period and increased by several minutes in the northbound and southbound direction during the evening period. The travel time runs for transit routes (Caltrain and SamTrans Bus Route KX) are consistent with the 2001 travel times.

2. Pedestrian and Bicycle Improvements

The next CIP program will incorporate bicycle and pedestrian issues in the evaluation criteria.

3. Ridership/Person Throughput for Transit

Total annual and weekday average ridership information was collected for SamTrans, Caltrain, and BART (Colma and Daly City station). These average weekday ridership numbers were compared to 1999 and 2001 conditions.

SamTrans, Caltrans, and BART total ridership increased by 70,000, 1.9 million, and 1.5 million passengers, respectively, between 1999 and 2001. Between 2001 and 2003, SamTrans, Caltrain, and BART total ridership decreased by 1.8 million, 2.2 million, and 600,000 passengers, respectively. The average weekday ridership for SamTrans was constant at 60,000 passengers between 1999 and 2001 and decreased to 52,800 passengers in 2003. Average weekday ridership for Caltrain increased by 6,000 passengers to 32,900 passengers between 1999 and 2001 and decreased to 27,800 passengers in 2003. BART average weekday ridership increased from 25,800 in 1999 to 29,500 passengers in 2001 and decreased to 27,300 passengers in 2003.

Status of Capital Improvement Projects

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
1993 CMP CIP Projects					
Bicycle and Pedestrian Facilities					
Pacifica SR 1 and City Streets bike route improvements ($296,000)				X	
San Carlos Industrial Road rehab for bikes and pedestrians (East San Carlos Avenue – Bing Street) - $1,187,000			X		Expected completion Jan 2004.
Pacifica SR 1 bike path (Linda Mar Boulevard – Crespi Drive) - $192,000				X	
Regional Projects					
Joint Powers Board CALTRAIN railcar rehabilitation ($3,273,400)				X	

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
1994 CMP CIP Projects					
Bicycle and Pedestrian Facilities: Transportation Enhancements Activities Projects					
Pacifica Bike trail along beach area ($268,800)				X	
1995 CMP CIP Projects					
Operational Improvements					
Redwood City El Camino Real signal coordination ($330,000)				X	
San Mateo Delaware Street/19th Avenue signal interconnect ($110,000)				X	

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
1997 CMP CIP Projects Approved for 1997-1999 Funding					
Freeway/Highway Improvements					
Transportation Authority US 101 Northbound Auxiliary Lane: Ralston Avenue to Hillsdale Boulevard ($3,000,000)				X	
Other Roadway Improvements					
Daly City John Daly Boulevard/I-280 overcrossing widening ($2,507,000)				X	
Transit Improvements					
Joint Powers Board CALTRAIN Hillsdale Station parking rehabilitation ($500,000)			X		Expected completion Feb 2004.
Joint Powers Board CALTRAIN track rehabilitation ($500,000)			X		Expected completion 31 July 2005; part of JPB CTX project.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
1998 CMP CIP Projects Approved for STIP Funding (in 1997 dollars)					
Freeway/Highway Improvements					
CALTRANS Route 1 Devil's Slide tunnel ($3.6 million)	X				Partial funding only.
Transportation Authority Route 101 Auxiliary Lanes: Route 92 to Marsh Road ($20.6 million)			X		Includes $709,000 in landscaping. Expected completion April 2004.
CALTRANS Route 92 slow vehicle lane improvements ($21.1 million)	X				
Half Moon Bay Route 92 and Main Street intersection improvements: Route 92 widening and realignment ($2.8 million)		X			Partially funded locally by Transportation Authority in amount $1.5 million.
Transit Improvements					
Joint Powers Board CALTRAIN centralized control system ($5.6 million)			X		Expected completion 31 July 2005; part of JPB CTX project.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
1998 Demonstration Projects					
Pacifica San Pedro Creek Bridge project at Route 1 ($1.1 million)	X				
San Mateo Route 92 and El Camino Real interchange improvements ($2.8 million)	X				
CALTRANS I-380 connector at Sneath Lane ($2.1 million)	X				
1999 Federal 25% Funding					
Operational Improvements					
San Bruno Sneath Lane signal interconnect ($620,000)			X		Expected completion April 2004.
Menlo Park El Camino Real signal interconnect ($1,010,000)				X	

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
Transit Improvements					
Joint Powers Board CALTRAIN signal improvements ($890,000)			X		Expected completion 31 July 2005; part of JPB CTX project.
1999 Federal 75% Funding					
Other Roadway Improvements					
South San Francisco South Airport Boulevard repaving ($243,000)				X	
South San Francisco Westborough Boulevard repaving ($444,000)				X	
Menlo Park Santa Cruz Avenue repaving ($292,695)				X	
Daly City Junipero Serra Boulevard repaving ($330,000)				X	
Redwood City Ralston Avenue reconstruction (Granada Street - US 101 overcrossing) - $105,000			X		Expected completion Sept 2005. Combined with 2000 STIP Ralston Ave/US 101 interchange modification.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
Belmont Ralston Avenue repaving ($80,750)			X		Expected completion Jan 2004. Combined with 1999 75% Alameda de las Pulgas repaving project.
San Bruno Sneath Lane repaving (Skyline Boulevard - I-280) - $247,000			X		Expected completion Jan 2004.
San Bruno Sneath Lane repaving (El Camino Real - I-280) - $313,000		X (Aug 01)			Combined w/ 2000 CMAQ El Camino Real and Sneath Lane intersection improvement.
Belmont Alameda de las Pulgas repaving ($64,000)			X		Expected completion Jan 2004. Combined with 1999 75% Ralston Avenue repaving project.
Belmont Ralston Avenue reconstruction (Cipriani Boulevard to Alameda de las Pulgas) - $375,000			X		Expected completion Jan 2004.
San Mateo El Camino Real repaving ($456,000)				X	
Millbrae Millbrae Avenue repaving ($124,000)				X	

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
Transit Improvements					
Joint Powers Board CALTRAIN track rehabilitation ($3.8 million)			X		Expected completion 31 July 2005; part of JPB CTX project.
Joint Powers Board CALTRAIN Express Third Track (CTX) project ($327,500)			X		Expected completion 31 July 2005.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
1999 Federal Safe Routes to School Program					
Belmont Nesbit School bikeway installation ($315,000)			X		Expected completion Jan 2004.
1999 Transportation Development Act (TDA) Article # 3 Projects: Bicycle and Pedestrian Facilities					
Half Moon Bay Coastside Trail extension ($121,500)				X	Funds expire 31 Dec 2003; extension granted.
2000 Federal Congestion Mitigation and Air Quality (CMAQ) Projects					
Operational Improvements					
Belmont Ralston Avenue signal interconnect ($132,750)		X (Sept 02)			
Colma Junipero Serra Boulevard signal interconnect ($532,000)			X		Expected completion Jan 2004.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
Daly City Geneva Avenue signal improvements ($367,000)				X	
San Mateo 3rd and 4th Avenues signal interconnect ($110,000)				X	
Safety Improvements					
Belmont El Camino Real and Fifth Avenue safety improvements ($40,000)		X (Jul 01)			
Brisbane Bayshore Boulevard and Valley Drive intersection reconstruction ($75,000)				X	
Millbrae Millbrae Avenue and El Camino Real safety improvements ($200,000)			X		Expected completion Jan 2004.
San Bruno El Camino Real and Sneath Lane intersection improvement ($1,000,000)		X (May 02)			Combined w/ 1999 75% Sneath Lane repaving (I-280-El Camino Real).
San Carlos Industrial Road sidewalk construction ($1,231,750)			X		Supplemental funding for original 1993 CMP project.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
Pedestrian and Bicycle Facilities					
San Mateo County Mirada Road pedestrian/bicycle bridge ($147,750)			X		Expected completion Jan 2004. Transportation Enhancements Activities Project.
Redwood City Redwood Shores pedestrian/bicycle multi-purpose path ($194,750)				X	Transportation Enhancements Activities Project.
Belmont US 101 bicycle and pedestrian path ($300,000)					Project funding cancelled: money returned to MTC.
Half Moon Bay Route 92 pedestrian/bicycle amenities and landscaping ($813,610)					Project cancelled; funding shifted to San Mateo TEA project.
San Mateo Main Street pedestrian corridor and Transit Center links ($1,985,000 + $813,610)			X		Expected completion Feb 2004. Transportation Enhancements Activities Project; additional $813,610 shifted from Half Moon Bay TEA project.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
Transit Improvements					
Joint Powers Board CALTRAIN San Carlos Station parking lot improvements ($1,000,000)		X (Feb 02)			
Joint Powers Board CALTRAIN track and signal rehabilitation ($938,000)			X		Expected completion 31 July 2005; part of JPB CTX project.
SAMTRANS Bus communication system upgrade ($885,000)			X		Expected completion May 2004.
Community Improvements					
San Carlos San Carlos Downtown Improvement Program ($650,000)				X	Transportation for Livable Communities Project.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
2000 Federal Surface Transportation Program (STP) Projects					
Freeway/Highway Improvements					
Transportation Authority US 101 Northbound Auxiliary Lane: Ralston Avenue to Hillsdale Boulevard ($534,600 + $2.142 million)				X	Supplemental funding for original 1997 CMP project.
Other Roadway Improvements					
Atherton Middlefield Road pavement rehabilitation ($1,147,000)				X	
Burlingame California Drive repaving ($210,000)				X	
Daly City Geneva Avenue pavement rehabilitation ($345,000)		X (Jan 02)			
Daly City John Daly Boulevard pavement rehabilitation ($695,000)				X	

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
Daly City John Daly Boulevard/ I-280 overcrossing widening ($147,000)				X	Supplemental funding for original 1997 CMP project.
Foster City Repaving (E. Hillsdale Boulevard/ E. Third Avenue/ Metro Center Boulevard) - $447,000				X	
Foster City E. Hillsdale Boulevard repaving (Shell Boulevard to Pilgrim Drive) - $85,000				X	
Foster City E. Third Avenue reconstruction ($257,000)				X	
Foster City Shell Boulevard repaving ($170,000)				X	
Foster City Beach Park Boulevard bridge approach repair ($248,000)				X	
Hillsborough Skyline Boulevard repaving ($77,000)				X	
Menlo Park Sand Hill Road repaving ($139,000)				X	

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
Menlo Park Marsh Road repaving ($89,000)				X	
Menlo Park Oak Grove Avenue repaving ($35,000)				X	
Menlo Park University Drive repaving ($87,000)				X	
Millbrae Millbrae Avenue reconstruction at US 101 ($374,000)				X	Combined with 1999 75% repaving project.
Pacifica Roberts Road and Sea Bowl Lane pavement rehabilitation ($127,896)				X	
San Carlos Industrial Road pavement rehabilitation ($406,000)			X		Supplemental funding for original 1993 CMP project.
San Carlos San Carlos Avenue pavement rehabilitation ($225,000)				X	Advanced Construction authorized.
San Mateo County Hillside Boulevard repaving ($45,000)				X	
San Mateo County Alameda de las Pulgas repaving ($60,000)				X	

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
San Mateo County Sand Hill Road repaving ($161,000)				X	Advanced Construction authorized.
San Mateo County South Airport Boulevard reconstruction ($231,500)				X	
San Mateo County Edgewood Road repaving ($323,500)				X	
San Mateo County Polhemus Road repaving ($238,000)			X		Expected completion Jan 2004.
San Mateo County El Camino Real pavement rehabilitation ($810,000)				X	
Woodside Farm Hill Boulevard repaving ($55,000)				X	
Transit Improvements					
Joint Powers Board CALTRAIN maintenance facility ($1,062,000)			X		Expected completion Dec 2005.
SAMTRANS Bus maintenance facility rehabilitation ($253,000)			X		Expected completion Jan 2004.
BART Daly City yard and shop improvements ($849,600)			X		Expected completion June 2004.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
BART Daly City Station bike locker fireproofing ($22,000)				X	
2000 CMP CIP Projects Approved for STIP Funding					
Freeway/Highway Improvements					
Half Moon Bay Route 92 and Main Street intersection improvements: Route 92 widening and realignment ($1,000,000)	X				Supplemental funding for original 1998 CMP project.
Transportation Authority Route 92 curve correction east of Half Moon Bay ($2,619,000)	X				Transferred $119,000 from Half Moon Bay Route 92 pavement rehabilitation project.
Redwood City Ralston Avenue/US 101 interchange modification ($3,100,000)			X		Expected completion Sept 2005. Combined with 1999 75% Ralston Avenue reconstruction (Granada Street-US101 overcrossing).
CALTRANS Route 101 Harbor Boulevard off ramp soundwall ($666,000)			X		Expected completion March 2004.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
Other Roadway Improvements					
Atherton Middlefield Road rehabilitation ($152,000)				X	Combined with 2000 STP rehabilitation project.
Belmont Various streets resurfacing ($291,000)				X	
Brisbane Bayshore Boulevard maintenance ($59,000)				X	
Portola Valley Various streets resurfacing ($118,000)				X	
Redwood City Roosevelt Avenue reconstruction ($1,458,000)				X	Includes $705,000 in Transit Oriented Development funding.
Pedestrian and Bicycle Facilities					
San Mateo Safe Routes to School Program: Bayside and Sunnybrae Schools speed signs ($36,450)				X	

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
Transit Improvements					
BART Daly City Station improvements ($700,000)				X	
BART Colma Station/San Francisco Intl Airport bike trail ($2,500,000)	X				
Joint Powers Board CALTRAIN passenger car rehabilitation ($1,333,333)				X	
Joint Powers Board CALTRAIN track, station, and signal rehabilitation ($366,667)			X		Expected completion 31 July 2005; part of JPB CTX project.
SAMTRANS Bus stop rehabilitation ($576,000)			X		Expected completion June 2004.
SAMTRANS Bus maintenance facility rehabilitation ($540,000)			X		Expected completion Dec 2004; part of SAMTRANS STP rehabilitation project.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
2000 Transportation Development Act (TDA) Article #3 Projects: Bicycle and Pedestrian Facilities					
Belmont US 101 bicycle and pedestrian bridge ($200,000)				X	
Half Moon Bay Route 92 bicycle lanes and sidewalks ($485,146)	X				Extension granted to 30 Sept 2005.
Menlo Park Traffic signal bicycle detectors ($15,600)				X	
San Mateo J. Hart Clinton Drive bicycle/pedestrian crossing ($78,000)				X	
South San Francisco San Francisco Bay Trail improvements ($100,000)				X	Extension granted to 30 June 2004.
South San Francisco Bicycle signage project ($6000)				X	
Half Moon Bay Coastside Trail (Surfer's Beach) - $90,718					Project cancelled; funding shifted to Half Moon Bay TDA Route 92 bicycle lanes and sidewalks project.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
Woodside Canada Road bikeway project ($30,000)				X	Funds carried over from 1998.
2000 CMP CIP Projects					
Community Improvements					
Daly City Landmark Development Project	X				Housing Incentive Program Project. Extension granted to 30 May 2004.
Daly City Mission Street pedestrian improvements ($311,500)	X				HIP Transportation Project.
East Palo Alto Nugent Square Development Project ($123,000)			X		Housing Incentive Program Project; combined with University Avenue Apartments Development. Housing construction expected to be completed Sept 2004.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
East Palo Alto University Avenue Apartments Development Project ($101,000)	X				Housing Incentive Program Project; combined with Nugent Square Development. Extension granted to 30 May 2004.
San Bruno Navy Site Development Project			X		Housing Incentive Program Project. Housing construction expected to be completed Dec 2004.
San Bruno El Camino Real pedestrian improvements ($936,500)	X				HIP Transportation Project.
San Carlos South Plaza Development Project ($113,000)					Housing Incentive Program Project cancelled; funding returned to MTC.
San Mateo Promethius Development Project				X	Housing Incentive Program Project.
San Mateo 3rd and 4th Avenues pedestrian and streetscape improvements ($682,500)	X				HIP Transportation Project.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
2001 Bus/Streets Rehabilitation Program					
Belmont Various streets resurfacing ($200,000)			X		Expected completion Jan 2004.
Colma Various streets resurfacing ($35,200)		X			Extension granted to 31 Dec 2004.
East Palo Alto Various streets resurfacing ($200,000)			X		Extension granted to Feb 2004.
San Bruno Various streets resurfacing ($200,000)			X		Extension granted to 31 Dec 2003.
2001 Hazard Elimination Safety (HES) Program					
Belmont El Camino Real and Fifth Avenue safety improvements ($80,000)		X (Jul 01)			Supplemental funding for original 2000 CMAQ project.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
2001 Federal Safe Routes to School Program					
Foster City Foster City and Bowditch Schools beacons and signs ($74,943)	X				Funding Agreement deadline: 30 June 2004.
San Mateo County Fair Oaks School sidewalks and traffic signs ($151,470)	X				Advanced Construction authorized.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
2001 Transportation Development Act (TDA) Article #3 Projects: Bicycle and Pedestrian Facilities					
Menlo Park Willow Place bicycle bridge ($240,000)			X		Expected completion Jan 2004.
Menlo Park Alma Street bicycle lanes ($18,850)			X		Expected completion Jan 2004.
Belmont US 101 bicycle and pedestrian bridge ($300,000)	X				
Half Moon Bay Poplar Street bicycle/pedestrian path ($165,000)				X	Combined with 1999 TDA project.
San Mateo Mills Hospital mid-block pedestrian crosswalk ($45,000)				X	
San Mateo Hayward Park Station bicycle lockers ($12,000)	X				
San Mateo Main Street Garage bicycle lockers ($20,000)				X	

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
San Mateo Concar Drive mid-block pedestrian crosswalk ($45,000)				X	
South San Francisco Bicycle route signage ($6000)				X	
2002 Federal Congestion Mitigation and Air Quality (CMAQ) Projects					
Community Improvements					
East Palo Alto Bay Road Streetscape and Traffic Calming Improvements ($700,000)	X				Transportation for Livable Communities Project.
Planning Grants					
Colma Mission Street Pedestrian and Streetscape Plan ($22,000)			X		Expected completion June 2004. Transportation for Livable Communities Project.
Millbrae BART Extension Bikeway Alignment Plan ($60,000)			X		Expected completion Jan 2004. Transportation for Livable Communities Project.

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
2002 CMP CIP Projects Approved for STIP Funding					
Freeway/Highway Improvements					
Transportation Authority Menlo Park Willow Road/US 101 interchange reconstruction ($12 million)	X				
Transportation Authority Route 101 Auxiliary Lanes: Marsh Road to Santa Clara County ($19.6 million)	X				
Transportation Authority Route 101 Auxiliary Lanes: San Mateo Third Avenue to Millbrae Avenue ($43.7 million)	X				
2002 Traffic Engineering Technical Assistance Program (TETAP) Grants					
Menlo Park Willow Road at US 101 signal coordination ($10,000)				X	

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
South San Francisco East of US 101 signal coordination ($12,000)				X	
2002 Transportation Development Act (TDA) Article #3 Projects: Bicycle and Pedestrian Facilities					
Woodside Route 84 shoulder improvements ($25,000)				X	
Pacifica Route 1 multi-purpose trail ($500,000)			X		Expected completion April 2004.
San Mateo Class II bicycle lane ($75,000)				X	
South San Francisco Callan Boulevard bicycle lanes ($16,250)				X	
South San Francisco San Francisco Bay Trail improvements ($77,000)				X	Combined with 2000 TDA project.
San Mateo Crystal Springs Road bicycle improvements ($81,200)	X				

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
San Mateo Fashion Island Bridge bicycle lane ($22,500)	X				
South San Francisco Grand Avenue/Maple Avenue mid-block pedestrian crosswalk ($100,000)				X	
South San Francisco Grand Avenue/Magnolia Avenue mid-block pedestrian crosswalk ($60,000)				X	
2002 Transportation Fund for Clean Air (TFCA) Projects					
City/County Association of Governments (C/CAG) Administrative costs ($54,466)				X	
SAMTRANS Shuttle bus program ($428,353)				X	
Menlo Park Midday shuttle ($30,732)				X	
Peninsula Congestion Relief Alliance Voluntary trip reduction programs ($310,767)				X	

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
2003 Hazard Elimination Safety (HES) Program					
San Bruno El Camino Real emergency vehicle priority system ($300,600)	X				
Pacifica Milagra Drive Overcrossing bicycle and pedestrian rehabilitation ($360,000)	X				
2003 Federal Safe Routes to School Program					
Belmont School zone signs and lighted crosswalks ($372,690)	X				
2003 Traffic Engineering Technical Assistance Program (TETAP) Grants					
Belmont Ralston Avenue roundabouts ($!5,000)				X	
Daly City Juniperro Serra Boulevard/ Sullivan Avenue/San Pedro Road signal coordination ($17,000)				X	

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
2003 Transportation Development Act (TDA) Article #3 Projects: Bicycle and Pedestrian Facilities					
South San Francisco Orange Avenue intersection improvements ($100,000)	X				
San Mateo Regional Bayfront Trail upgrade ($150,000)			X		Expected completion Aug 2004.
San Bruno Crystal Springs Road traffic signal modification ($20,000)			X		Expected completion Jan 2004.
Pacifica Milagra Drive Overcrossing at State Route 1 repair project ($240,000)	X				Supplemental funding for original 2003 HES project.
San Mateo Bikeway detection units ($30,000)	X				

Table F-3
Status of CIP Projects

Project Description	Funding not yet Obligated	Funding Fully Obligated	Under Construction	Completed	Remarks
2004 Hazard Elimination Safety (HES) Program					
San Mateo Poplar Avenue median ($207,900)	X				
Daly City Lake Merced Boulevard flashing beacons and warning signs ($111,870)	X				
Menlo Park Willow Road emergency vehicle priority systems ($180,000)	X				

TABLE 2.1

	PROJECTS	SMCTA Approved Revised Budget (A)	SMCTA Projected Cumulative Expenditures & Encumbrances thru 6/30/01 (B)	FEDERAL Funds (C)	STATE Funds (D)	LOCAL Funds (E)	TOTAL Funding (F) A+C+D+E	STRATEGIC PLAN Forecast 6/4/01 (G)	FUTURE Funding Requirement (G-F)
CALTRAIN PROJECT									
605	San Mateo Local Share JPB 2001 CIP	8,035,000	2,300,000				2,300,000	2,300,000	
608	Miscellaneous (608, 691, 692, 699)	91,225	91,225				91,225	91,225	
609	Caltrain ROW Purchase	39,191,870	39,191,870				39,191,870	39,191,870	
690	San Bruno Station Feasibility Study	100,000	75,615				100,000	100,000	
693	Downtown Extension	700,379	700,379				700,379	700,379	
695	Airport Connection Study	50,893	50,893				50,893	50,893	
696		410,571	410,571				410,571	410,571	
697	Parking Expansion	8,500,000	7,195,240				8,500,000	8,500,000	
700	JPB Trackwork SM MP RWC	5,271,128	4,053,393				6,271,128	6,271,128	
701	Caltrain Rapid Rail Study	484,621	485,046	850,000			1,334,621	1,335,046	425
702	Design for Prelim-Engr @ SSF Caltrain Station	150,000	87,067				150,000	150,000	
704	Caltrain Maintenance Facility	8,218,350	476,243				8,218,350	8,218,350	
705	Burlingame, Hillsdale Planning Study	600,000	493,280				600,000	600,000	
707	SSF Station Platform/Track Design	1,300,000	495				1,300,000	1,300,000	
708	Burlingame/Broadway Station Platform	1,100,000	988,475				1,100,000	1,100,000	
709	San Bruno Station Platform and Track Design	500,000	957				500,000	500,000	
711	San Mateo Grade Crossing Rehab- 5 Crossings	310,000	1,835				310,000	310,000	
712	SM Plat Ext./Pedestrian Terminal	4,350,000	2,851,764				4,350,000	4,350,000	
713	Platform Ext. Design-San Mateo	745,000	403,735				745,000		
717	Hayward Park Station West Side Design Const.	750,000	451,821				750,000	750,000	
	SUBTOTAL CALTRAIN MAINLINE	76,124,037	60,309,905	850,000	0	0	76,974,037	76,974,037	0
	Dumbarton Branch	50,000,000	0				50,000,000	50,000,000	
	TOTAL CALTRAIN	126,124,037					126,974,037	126,974,037	

TABLE 2.3

	PROJECTS	SMCTA	SMCTA	FEDERAL	STATE	LOCAL	TOTAL	STRATEGIC PLAN	FUTURE
		Approved Revised Budget (A)	Projected Cumulative Expenditures & Encumbrances Thru 6/30/01 (B)	Funds (C)	Funds (D)	Funds (E)	Funding (F) A+C+D+E	Forecast 6/4/01 (G)	Funding Requirement (G-F)
RAILROAD GRADE SEPARATIONS									
671	Oyster Point	11,005,000	11,005,000			13,520,000	24,525,000	24,525,000	0
672	Howard/Brittan	11,334,231	11,334,230				11,334,231	11,334,230	0
673	5th Avenue	10,274,114	10,274,114			7,007,386	17,281,500	17,281,500	0
674	Millbrae Avenue	13,299,453	13,299,453			11,990,547	25,290,000	25,290,000	0
676	25th Avenue	300,000	5,272				300,000	300,000	0
677	Ralston/Holly/Harbor (677,681,683)	60,166,667	57,055,375		35,323,000	3,600,000	99,089,667	99,089,667	0
678	Whipple	8,000	6,410				8,000	6,410	(1,590)
680	Jefferson	9,109,000	8,680,510		5,500,000	609,000	15,218,000	15,512,542	(294,542)
698	Land Banking (Pre-project ROW acquisition)	8,008,000	7,580,352				8,008,000	8,138,000	(130,000)
714	San Mateo West RR Avenue – City Improvements	315,000	131,232				315,000	315,000	0
715	San Mateo North RR Avenue – City Improvements	475,000	77,946				475,000	475,000	0
716	San Mateo Grade Separation Study	160,000	42,825				160,000	150,000	0
756	Planning Studies	675,000	0				175,000	175,000	0
757	Menlo Park Grade Separation	200,000					200,000	200,000	
	TOTAL RR GRADE SEPARATIONS	128,070,605	119,737,542		40,823,000	26,203,250	194,896,855	191,907,742	(429,825)

TABLE 2.5

	PROJECTS	SMCTA	SMCTA	FEDERAL	STATE	LOCAL	TOTAL	STRATEGIC PLAN	FUTURE
		Approved Revised Budget (A)	Projected Cumulative Expenditures & Encumbrances thru 6/30/01 (B)	Funds (C)	Funds (D)	Funds (E)	Funding (F) A+C+D+E	Forecast 6/4/01 (G)	Funding Requirement (G-F)
STREETS AND HIGHWAYS									
ROUTE 101 INTERCHANGES:									
621	Broadway	850,000	345,935				850,000	46,500,000	(45,650,000)
622	Willow	1,043,583	517,072				1,043,583	29,313,000	(28,269,417)
623	University Ave (PA) Reconstruction	1,100,000	1,099,744				11,640,000	12,740,000	0
624	Brittan	9,735,000	8,789,147				9,735,000	9,735,000	0
625	Candlestick	1,000	934				1,000	47,700,000	(47,699,000)
626	Marsh	9,651,178	9,535,415				9,651,178	9,651,178	0
627	Oyster Point, Phase 1	5,700,000	5,700,000			6,443,803	12,143,803	12,143,803	0
710	Geneva Ave. Corridor Study	40,000	0				40,000	35,000	5,000
718	Oyster Point Phase II	9,970,000	1,033,168			9,973,000	19,943,000	19,946,000	(3,000)
719	Oyster Point Phase III-A	10,750,000	222,019			20,137,000	30,887,000	30,887,000	0
720	Oyster Point Phase III-B	10,750,000	0				10,750,000	0	10,750,000
726	Peninsula Interchange Modification	950,000	188,789				950,000	32,000,000	(31,050,000)
								0	
ROUTE 101 AUX LANES:									
638	Rte 92 to 3rd -NB & SB	7,465,000	6,912,605		7,200,000		14,665,000	14,807,000	(142,000)
631	Rte 92 to Marsh (631,633,634,635,636,637)	25,899,063	5,985,474	3,000,000	23,100,900		51,999,963	52,000,000	(37)
629	Marsh to University	850,209	429,489				850,209	40,555,000	(39,411,208)
630	University to SM/SC line	293,583	123,472				293,583	293,583	
723	San Bruno to Sierra Point	11,000	349				11,000	26,300,000	(26,289,000)
724	Sierra Point to SF Line	11,000	583				11,000	3,400,000	(3,389,000)
725	3rd to Millbrae	5,916,410	613,448	3,250,000	13,400,000		22,566,410	55,000,000	(32,433,590)
ROUTE 92:									
651	SR1 to Half Moon Bay Improvements	3,920,000	63,544		2,850,000	1,730,000	8,500,000	10,709,000	(2,209,000)
652	Half Moon Bay to Pilarcitos Creek	13,400,000	2,956,556		2,619,000		16,019,000	20,000,000	(3,981,000)
653	Pilarcitos Creek to Rte 35	7,608,055	7,579,052		10,874,000		18,482,055	18,625,000	(142,945)

Measure A Expenditure Plan
(4 of 4)

	PROJECTS	SMCTA	SMCTA	FEDERAL	STATE	LOCAL	TOTAL	STRATEGIC PLAN	FUTURE
		Approved Revised Budget (A)	Projected Cumulative Expenditures & Encumbrances thru 6/30/01 (B)	Funds (C)	Funds (D)	Funds (E)	Funding (F) A+C+D+E	Forecast 6/4/01 (G)	Funding Requirement (G-F)
654	Route 35 to I-280	9,281,000	484,902		20,219,000		29,500,000	32,000,000	(2,500,000)
733	Route 101 to Route 280	1,145,207	444,949				1,145,207	87,400,000	(86,254,793)
ROUTE 84:									
655	Bayfront Expwy, Willow to Marsh (Interim Improvements)	3,309,720	2,896,984			412,736	3,722,456	3,722,456	0
656	Bayfront Expwy, Extension: Marsh to Woodside Road	2,516,200	828,615				2,516,200	105,500,000	(102,983,800)
ROUTE 280:									
659	I-280 Eastmoor Off ramp – Ph 1 & 2	1,139,764	1,039,764		5,065,800	1,006,400	7,211,964	7,112,000	99,964
665	D Street Overcrossing	11,547,230	10,140,000			1,407,230	12,954,460	12,954,460	0
753	280/380 Local Access	1,660,236	1,000,424	2,100,000			3,760,236	13,500,000	(9,739,764)
754	EB Rt1 to SB 280 and Serramonte	730,000	457,818				730,000	43,400,000	(42,670,000)
ROUTE 1:									
615	Fassler Ave to Westport	565,000	111,277				565,000	6,600,000	(6,035,000)
616	Half Moon Bay	2,000	1,342				2,000	34,800,000	(34,798,000)
	TOTAL STREETS & HIGHWAYS	176,525,298	69,129,368	8,350,000	85,328,700	34,666,366	304,870,364	839,662,954	(535,086,173)

APPENDIX G

Land Use Guidelines

C/CAG

CITY/COUNTY ASSOCIATION OF GOVERNMENTS
OF SAN MATEO COUNTY

Atherton • Belmont • Brisbane • Burlingame • Colma • Daly City • East Palo Alto • Foster City • Half Moon Bay • Hillsborough • Menlo Park
Millbrae • Pacifica • Portola Valley • Redwood City • San Bruno • San Carlos • San Mateo • San Mateo County • South San Francisco • Woodside

TO: All City Managers and Planning Directors

FROM: Walter Martone

DATE: June 11, 2002

RE: REVISED C/CAG GUIDELINES FOR THE IMPLEMENTATION OF THE LAND USE COMPONENT OF THE CONGESTION MANAGEMENT PROGRAM

At the C/CAG meeting on May 9, 2002, the Board adopted revised guidelines for the land use component of the Congestion Management Program. The purpose of the revision is to increase the options for reducing the impacts of the traffic created as a result of new development. The new options include trip credits for transportation demand management programs that encourage walking and bicycling to and from work. The changes to the guidelines are noted in **BOLD CAPITAL** LETTERS. The revisions to the guidelines will take effect immediately. As a reminder, the Congestion Management Program policy and guidelines must be followed for all projects that meet the following criteria:

1. the project will generate a net 100 or more peak period trips on the Congestion Management Program network, and
2. the project is subject to CEQA review, and
3. the project will not have completed the scoping and initial study process prior to May 25, 2000.

If you have a project that meets these criteria, you should follow these steps:

1. review the Guidelines with the project applicant and determine if a combination of the acceptable options/measures will fully reduce the net number of trips that this project is anticipated to generate on the CMP roadway network.
2. if yes, include this information as part of the environmental documents that are circulated and adopted by the local jurisdiction Board.
3. if no, or if new or revised measures are being proposed, contact Walter Martone for C/CAG review and approval as early in the process as possible so that the agreed upon plan can be included in the environmental documents placed in circulation.
4. if agreement is not reached with C/CAG staff on the plan, an immediate review by the C/CAG Board will be scheduled so that the local jurisdiction project approval process

will not be delayed.

Although the C/CAG policy must be followed when a project generates 100 or more peak hour trips, local jurisdictions may want to consider implementing the policy at lower thresholds (less than 100 trips) in order to manage the traffic impacts more effectively.

Local jurisdictions are encouraged to develop creative solutions to reducing the traffic impacts of development. To that end it is highly beneficial that C/CAG staff be consulted at the very early stages of project development. Working together we can ensure that this new requirement provides benefits to the community and does not add further paperwork and delay to the development review process. Contact Walter Martone at 650 599-1465 (or e-mail at wmartone@co.sanmateo.ca.us) if you would like to discuss this policy and/or have specific projects to be reviewed.

GUIDELINES FOR IMPLEMENTING THE LAND USE COMPONENT OF THE CONGESTION MANAGEMENT PROGRAM

All land use changes or new developments that require a negative declaration or an Environmental Impact Report (EIR) and that are projected to generate a net (subtracting existing uses that are currently active) 100 or more trips per hour at any time during the a.m. or p.m. peak period, must be reported to C/CAG within ten days of completion of the initial study prepared under the California Environmental Quality Act (CEQA). Peak period includes 6:00 a.m. to 10:00 a.m. and 3:00 p.m. to 7:00 p.m. Although projects that generate less than 100 peak hour trips are not subject to these guidelines, local jurisdictions are strongly encouraged to apply them to all projects, particularly where the jurisdiction has determined that the impacts of the project will have an adverse effect on traffic in that jurisdiction.

These guidelines are not intended to establish a Countywide level of significance of 100 peak hour trips for CEQA purposes. The determination of what level of traffic results in a significant impact is left in the first instance to the local jurisdiction. These guidelines do contemplate, however, that all trips resulting from projects that are reviewed by C/CAG and fall under these guidelines will be mitigated, whether or not it rises to a level of significance under CEQA.

Local jurisdictions must ensure that the developer and/or tenants will reduce the demand for all new peak hour trips (including the first 100 trips) projected to be generated by the development. The local jurisdiction can select one or more of the options that follow or may propose other methods for mitigating the trips. It is up to the local jurisdiction working together with the project sponsor to choose the method(s) that will be compatible with the intended purpose of the project and the community that it will serve. The options identified in these guidelines are not intended to limit choices. Local jurisdictions are encouraged to be creative in developing options that meet local needs while accomplishing the goal of mitigating new peak hour trips. The additional measures that are not specifically included in these guidelines should be offered for review by C/CAG staff in advance of approving the project. Appeals to the decisions by C/CAG staff will be taken to the full C/CAG Board for consideration.

When considering land use projects, local jurisdictions may either require that mitigation for impacts to the Congestion Management Program roadway network be finally determined and imposed as a condition of approval of the project, or may conditionally approve such project, conditioned on compliance with the requirements to mitigate the impacts to the Congestion Management Program roadway network. In those instances where conditional approval is given, a building permit may not be issued for the project until the required mitigation is determined and subsequently imposed on the project.

Some of the choices for local jurisdictions include:

1. Reduce the scope of the project so that it will generate less than 100 net peak hour trips.

2. Build adequate roadway and/or transit improvements so that the added peak hour trips will have no measurable impact on the Congestion Management Program roadway network. This means that 100% of the demand for new trips will be reduced.
3. If a local jurisdiction currently collects traffic mitigation fees, any portion of the fees that are used to mitigate the impacts of the project's traffic on the Congestion Management Program roadway network will count as a credit toward the reduction in the demand for trips required under the Congestion Management Program. The developer may also contribute a one-time only payment of $20,000 per peak hour trip (including the first 100 trips) to a special fund for the implementation of appropriate transportation demand management system measures at that development. These funds will be used to implement transportation demand management programs that serve the development making the contribution.
4. Require the developer and all subsequent tenants to implement Transportation Demand Management programs that have the capacity to fully reduce the demand for new peak hour trips. The developer/tenants will not be held responsible for the extent to which these programs are actually used. The following is a list of acceptable programs and the equivalent number of trips that will be credited as reduced. Programs can be mixed and matched so long as the total mitigated trips is equal to or greater than the new peak hour trips generated by the project. These programs, once implemented, must be on going for the occupied life of the development. Programs may be substituted with prior approval of C/CAG, so long as the number of reduced trips is not lessoned. Additional measures may be proposed to C/CAG for consideration. Also there may be special circumstances that warrant a different amount of credit for certain measures. For example a developer may elect to contract with the Alliance or another provider of TDM services to meet this requirement. These situations can also be submitted to C/CAG in advance for consideration. It is up to each local jurisdiction to use its best judgment to determine the extent to which certain measures are "reasonable and effective." For example, there will be a point where additional showers will not result in more people riding bicycles or walking to work.
5. Adopt Congestion Management Program guidelines for projects within its jurisdiction and submit those guidelines for approval by C/CAG. The local jurisdiction would then apply these guidelines to the appropriate level of project and provide an annual report describing affected projects and guidelines applied. C/CAG would review the jurisdiction's efforts on an annual basis and could require amendments to the jurisdiction's guidelines if the jurisdiction's guidelines were not meeting Congestion Management Program goals.
6. Adopt the C/CAG guidelines for application to the appropriate level of project in the jurisdiction, and submit an annual report describing affected projects and guidelines applied. C/CAG would review the jurisdiction's efforts on an annual basis and could require amendments to the jurisdiction's guidelines if the jurisdiction's guidelines were not meeting Congestion Management Program goals.
7. Negotiate with C/CAG staff for other acceptable ways to mitigate the trips for specific developments on a case-by-case basis.

Transportation Demand Management Measure	Number of Trips Credited	Rationale
Bicycle lockers and racks.	One peak hour trip will be credited for every 3 new bike lockers/racks installed and maintained.	Experience has shown that bicycle commuters will average using this mode one-third of the time, especially during warmer summer months.
Showers and changing rooms.	Two peak hour trips will be credited for each new combination shower and changing room installed.	Two bicyclists can sequentially use one shower/changing room during the peak commute time.
Operation of a dedicated shuttle service during the peak period to a rail station or an urban residential area.	One peak hour trip will be credited for each peak-hour round trip seat on the shuttle. Increases to two trips if a Guaranteed Ride Home Program is also in place. Five additional trips will be credited if the shuttle stops at a child care facility enroute to/from the worksite.	Yields a one-to-one ratio (one seat in a shuttle equals one auto trip reduced); utilization increases when a guaranteed ride home program is also made available.
Charging employees for parking.	One peak hour trip will be credited for each parking spot charged out at $20 per month for one year.	Yields a one-to-one ratio (one parking spot charged out equals one auto trip reduced.
Subsidizing transit tickets for employees.	One peak hour trip will be credited for each transit pass that is subsidized at least $20 per month for one year. One additional trip will be credited if the subsidy is increased to $75 for parents using transit to take a child to childcare enroute to work.	Yields a one-to-one ratio (one transit pass equals one auto trip reduced).

SUBSIDIZING PEDESTRIAN/ BICYCLISTS WHO COMMUTE TO WORK.	ONE PEAK HOUR TRIP WILL BE CREDITED FOR EACH EMPLOYEE THAT IS SUBSIDIZED AT LEAST $20 PER MONTH FOR ONE YEAR	YIELDS A ONE-TO-ONE RATIO (ONE PEDESTRIAN/BICYCLIST EQUALS ONE AUTO TRIP REDUCED
Creation of preferential parking for carpoolers.	Two peak hour trips will be credited for each parking spot reserved.	Yields a two-to-one ratio (one reserved parking spot equals a minimum of two auto trips reduced).
Creation of preferential parking for vanpoolers.	Seven peak hour trips will be credited for each parking spot reserved.	Yields a seven-to-one ratio (one reserved parking spot equals a minimum of seven auto trips reduced).
Implementation of a vanpool program.	Seven peak hour trips will be credited for each vanpool arranged by a specific program operated at the site of the development. Increases to ten trips if a Guaranteed Ride Home Program is also in place.	The average van capacity is seven.
Operation of a commute assistance center, offering on site, one stop shopping for transit and commute alternatives information, preferably staffed with a live person to assist building tenants with trip planning.	One peak hour trip will be credited for each feature added to the information center; and an additional one peak hour trip will be credited for each hour the center is staffed with a live person, up to 20 trips per each 200 tenants. Possible features may include: • Transit information brochure rack • Computer kiosk connected to Internet • Telephone (with commute and transit information numbers) • Desk and chairs (for personalized trip planning) • On-site transit ticket sales • Implementation of flexible	This is based on staff's best estimate. Short of there being major disincentives to driving, having an on site TDM program offering commute assistance is fundamental to an effective TDM program.

	work hour schedules that allow transit riders to be 15-30 minutes late or early (due to problems with transit or vanpool). • **QUARTERLY EDUCATIONAL PROGRAMS TO SUPPORT COMMUTE ALTERNATIVES**	
Implementation of a parking cash out program.	One peak hour trip will be credited for each parking spot where the employee is offered a cash payment in return for not using parking at the employment site.	Yields a one-to-one ratio (one cashed out parking spot equals one auto trip reduced.
Implementation of ramp metering.	Three hundred peak hour trips will be credited if the local jurisdiction in cooperation with CalTrans, installs and turns on ramp metering lights during the peak hours at the highway entrance ramp closest to the development.	This is a very difficult and costly measure to implement and the reward must be significant.
Installation of highband width connections in employees' homes to the Internet to facilitate home telecommuting.	One peak hour trip will be credited for each connection installed.	Yields a one-to-one ratio.
Installation of video conferencing centers that are available for use by the tenants of the facility.	Twenty peak hour trips will be credited for a center installed at the facility.	Assumes that there will be one teleconference per day that includes twenty people.
Implementation of a compressed workweek program.	One peak hour trip will be credited for every 5 employees that are offered the opportunity to work four compressed days per week.	The workweek will be compressed into 4 days; therefore the individual will not be commuting on the 5th day.

Provision of assistance to employees so they can live close to work.	If an employer develops and offers a program to help employees find acceptable residences within five miles of the employment site, a credit of one trip will be given for each slot in the program.	This assumes that a five-mile trip will generally not involve travel on the freeways.
Conduct a local-based hiring program by registering with and using the Alliance Job Link Program.	One peak hour trip will be credited for every 2 job listings posted with this program.	This is based on staff's best estimate.
Implementation of a program that gives preference to hiring local residents at the new development site.	One peak hour trip will be credited for each employment opportunity reserved for employees recruited and hired from within five miles of the employment site.	This assumes that a five-mile trip will generally not involve travel on the freeways.
Provision of on-site amenities/accommodations that encourage people to stay on site during the workday, making it easier for workers to leave their automobiles at home.	One peak hour trip will be credited for each feature added to the job site. Possible features may include: • banking • grocery shopping • clothes cleaning • exercise facilities • child care center	This is based on staff's best estimate.
PROVIDE USE OF MOTOR POOL VEHICLES TO EMPLOYEES WHO USE ALTERNATE COMMUTE METHODS SO THEY CAN HAVE ACCESS TO VEHICLES DURING BREAKS FOR PERSONAL USE.	**ONE PEAK HOUR TRIP WILL BE CREDITED FOR EACH VEHICLE PROVIDED.**	**THIS IS BASED ON STAFF'S BEST ESTIMATE.**

PROVIDE USE OF BICYCLES TO EMPLOYEES WHO USE ALTERNATE COMMUTE METHODS SO THEY CAN HAVE ACCESS TO TRANSPORATION DURING BREAKS FOR PERSONAL USE.	**ONE PEAK HOUR TRIP WILL BE CREDITED FOR EVERY 4 BICYCLES PROVIDED.**	**THIS IS BASED ON STAFF'S BEST ESTIMATE.**
Provision of child care services as a part of the development	One trip will be credited for every two child care slots at the job site. This amount increases to one trip for each slot if the child care service accepts multiple age groups (infants=0-2yrs, preschool=3&4 yrs, school-age=5 to 13 yrs).	
Developer/property owner may join an employer group to expand available child care within 5 miles of the job site or may provide this service independently	One trip will be credited for each new child care center slot created either directly by an empoyer group, by the developer/property owner, or by an outside provider if an agreement has been developed with the developer/property owner that makes the child care accessible to the workers at the development.	
Join the Alliance's guaranteed ride home program.	One peak hour trip will be credited for every 2 slots purchased in the program.	Experience shows that when a Guaranteed Ride Home Program is added to a TDM program, average ridership increases by about 50%.
Combine any ten of these elements and receive an additional credit for five peak hour trips.	Five peak hour trips will be credited.	Experience has shown that offering multiple and complementary TDM components can magnify the impact of the overall program.

Work with the Alliance to develop/ implement a Transportation Action Plan.	Five peak hour trips will be credited.	This is based on staff's best estimate.
The developer can provide a cash legacy after the development is complete and designate an entity to implement any (or more than one) of the previous measures before day one of occupancy.	Peak hour trip reduction credits will accrue as if the developer was directly implementing the items.	Credits accrue depending on what the funds are used for.
Encourage infill development.	Two percent of all peak hour trips will be credited for each infill development.	Generally acceptable TDM practices (based on research of TDM practices around the nation and reported on the Internet).
Encourage shared parking.	Five peak hour trips will be credited for an agreement with an existing development to share existing parking.	Generally acceptable TDM practices (based on research of TDM practices around the nation and reported on the Internet).
Participate in/create/sponsor a Transportation Management Association.	Five peak hour trips will be credited.	Generally acceptable TDM practices (based on research of TDM practices around the nation and reported on the Internet).
Coordinate Transportation Demand Management programs with existing developments/ employers.	Five peak hour trips will be credited.	This is based on staff's best estimate.

For employers with multiple job sites, institute a proximate commuting program that allows employees at one location to transfer/trade with employees in another location that is closer to their home.	One peak hour trip will be credited for each opportunity created.	Yields a one-to-one ratio.
Pay for parking at park and ride lots or transit stations.	One peak hour trip will be credited for each spot purchased.	Yields a one-to-one ratio.

Additional Measures for Residential Developments

Develop schools, convenience shopping, recreation facilities, and child care centers in new subdivisions.	Five peak hour trips will be credited for each facility included.	This is based on staff's best estimate.
Provision of child care services at the residential development and/or at a nearby transit center	One trip will be credited for every two child care slots at the development/transit center. This amount increases to one trip for each slot if the child care service accepts multiple age groups (infants, preschool, school-age).	
Make roads and streets more pedestrian and bicycle friendly.	Five peak hour trips will be credited for each facility included.	This is based on staff's best estimate.
Revise zoning to limit undesirable impacts (noise, smells, and traffic) instead of limiting broad categories of activities.	Five peak hour trips will be credited.	This is based on staff's best estimate.

Create connections for non-motorized travel, such as trails that link dead-end streets.	Five peak hour trips will be credited for each connection make.	This is based on staff's best estimate.
Create alternative transportation modes for travel within the development and to downtown areas - bicycles, scooters, electric carts, wagons, shuttles, etc.	One peak hour trip will be credited for each on-going opportunity created (i.e. five bicycles/ scooters/wagons = five trips, two-seat carts = two trips, seven passenger shuttle = seven trips).	This is based on staff's best estimate.
Design streets/roads that encourage pedestrian and bicycle access and discourage automobile access.	Five trips will be credited for each design element.	This is based on staff's best estimate.
Install and maintain alternative transportation kiosks.	Five trips will be credited for each kiosk.	This is based on staff's best estimate.
Install/maintain safety and security systems for pedestrians and bicyclists.	Five trips will be credited for each measure implemented.	This is based on staff's best estimate.
Implement jitneys/ vanpools from residential areas to downtowns and transit centers.	One trip will be credited for each seat created.	Yields a one-to-one ratio.
Locate residential development within one-third mile of a fixed rail passenger station.	All trips from a residential development within one-third mile of a fixed rail passenger station will be considered credited due to the location of the development.	This is based on staff's best estimate.

The local jurisdiction must also agree to maintain data available for monitoring by C/CAG, that supports the on-going compliance with the agreed to trip reduction measures.

City County Association of Governments * Congestion Mangement Program

Land Use Impact Analysis Program Compliance

Jurisdiction	Date of Document	Type of Document	Project	Jurisdictional Status	Measures Taken	C/CAG Compliance
East PaloAlto	5/10/02	Mitigated Neg. Dec.	Conroe Ventures LLC	approved		Approved prior to C/CAG review
Redwood City	6/03	Draft and Final EIR	Marina Shores Village Project	approved	TDM incorporated into the Precise Plan	TDM meets C/CAG guidelines
Redwood City	5/04/03	Draft and Final EIR	Kaiser Permanente Master Plan	approved	TDM incorporated into the Precise Plan	TDM meets C/CAG guidelines
Half Moon Bay	10/25/02	Notice Mitigated Neg Dec	Coastside Trail		not applicable	Walking trail generating no traffic impacts
Half Moon Bay	1/03	Draft EIR	Carnoustie Residential Development		unable to reach parties involved	
Redwood City	10/11/02	Initial Study	RWC Downtown Area Plan and Housing Element	preparartion		
Brisbane	1/31/03	Notice	Design Permit Michael Halper Valley Associates LLC	approved prior to C/CAG approval	not applicable	none needed
Brisbane		Notice	Design Permit Tom Stubbs TMG Brisbane Associates	approved prior to C/CAG approval	not applicable	none needed
Brisbane	4/2001	Notice of preparation of Final EIR	One Quarry Rd. Residential Project	pending		Pending
Half Moon Bay	12/10/02	Mitigated Neg. Dec.	Half Moon Bay Library Expansion	review	not applicable	Project generates less than 100 net peak period trips
San Bruno	2/03/03	Notice to adopt a Neg. Dec.	City of San Bruno Housing Element	approved	not applicable	Not a specific or precise plan

Redwood City	3/04/03	Initial Study	Abbott Labs West Coast Research Center	preparartion		C/CAG waiting review
Menlo Park	2/10/03	Revised Mitigated Neg. Dec	Allied Arts Guild	approved prior to C/CAG approval	none	Project generated greater than 100 net peak period trips
Redwood City	1/2003	Initial Study	Redwood City Branch Library Project/Redwood Shores	pending		C/CAG waiting review
South San Francisco		Mitigated Neg. Dec.	600-700 Dubuque Ave.	Died pending		C/CAG waiting review
San Carlos	6/2003	Initial Study	East Side Specific Plan	preparartion of EIR	TDM is being developed to incorporate into the project	Trip generation is great than 100 net peak period trips C/CAG waiting review of TDM
Burlingame	6/30/03	Initial Study and Notice of Draft EIR	Mills Peninsula Hospital Replacement Project	preparation of Draft EIR		C/CAG waiting review
San Bruno	1/10/03	Notice of Draft EIR	San Bruno General Plan Update	preparation of Draft EIR	not applicable	Not a specific or precise plan
Redwood City	6/12/03	Addendum to the mitigated neg. dec.	RWC Recycled Water Project		not applicable	Facilities upgrades no trip generation
South San Francisco	10/16/02	Notice of preparation of Neg. Dec.	SSF General Plan and Housing Element	preparation of neg. dec.	not applicable	Not a specific or precise plan
East PaloAlto		Notice of preparation of Draft EIR	Ravenswood Business District	preparartion		C/CAG waiting review

APPENDIX H

Regional Transportation Plan Projects

SAN MATEO COUNTY PROJECTS—COMMITTED FUNDING

Attachment A

RTP REFERENCE NUMBER	PROJECT/PROGRAM WITH COMMITTED FUNDING	TOTAL PROJECT COSTS	NOTES
		In millions of 2001 dollars	
	SAN MATEO COUNTY-WIDE		
94662	Local streets and roads pavement maintenance (committed revenues shown)	$359.5	Shortfall remains (see Track 1)
21859	Non-pavement maintenance (sidewalk, lighting, drainage, landscaping, etc. – committed revenues shown)	$350.3	Shortfall remains
21867	Local bridge maintenance (committed revenues shown)	$46.3	Shortfall remains
94666	SamTrans – transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets; does not include system expansion)	$2,894.1	Federal, state and local funds (including transit fares) available directly to operator
94667	SamTrans Americans With Disabilities (ADA) services	$737.7	Measure A sales tax project
98631	BART Advanced Automatic Train Control System (county share)	$4.2	
94101	Bicycle and pedestrian projects	$27.1	Funds are from Transportation Development Act Article 3, Bicycle Transportation Account, and local TEA 21 Enhancement funds.
	PENINSULA		
21876	BART (San Mateo County share) – transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements, equipment, fixed facilities and other capital assets; does not include expansion except BART-to-SFO extension)	$1,528.6	Federal, state and local funds (including transit fares) available directly to operator; capital shortfall remains (see Track 1)
21336	Widen Airport Boulevard from 2 lanes to 4 lanes	$2.6	
21337	Widen Airport Boulevard bridge (14-foot widening of existing bridge structure)	$0.9	
21340	Extend Hickey Boulevard to construct 2-lane road between Mission Road and Hillside Boulevard in Colma	$1.9	
21349	US 101 interchange improvements and ramp metering at Ralston Avenue, Hillsdale Boulevard, and Millbrae Avenue	$14.4	
21351	Widen John Daly overcrossing at junction I-280 and Route 1	$2.8	
21352	Replace San Pedro Creek Bridge and road approaches	$1.5	
21439	Regional Express Bus Program: Route 82/El Camino Express, Daly City BART Station to Palo Alto	$4.9	2000 Traffic Congestion Relief Program project
21574	San Mateo Downtown Transit Center	$6.9	
21605	US 101/Oyster Point Boulevard interchange improvements (Phases 2 and 3)	$40.0	
21609	I-280/I-380 local access improvements	$5.0	
21617	Caltrain Express service between San Francisco and San Jose; includes passing tracks and rolling stock (Phase 1)	$42.3	Fully funded through 2000 Traffic Congestion Relief Program; cost of project divided equally among the three Joint Powers Board counties (San Francisco, San Mateo and Santa Clara).
21622	Caltrain local station improvements	$63.2	

Continues on next page

RTP REFERENCE NUMBER	PROJECT/PROGRAM WITH COMMITTED FUNDING	TOTAL PROJECT COSTS	NOTES
		In millions of 2001 dollars	
	PENINSULA (continued)		
21626	Caltrain grade separations (to be determined)	$113.0	
21892	Widen Route 84 from 4 lanes to 6 lanes from El Camino Real to Broadway	$7.5	
21893	Route 92 between Half Moon Bay city limits and Pilarcitos Creek alignment and shoulder improvements	$2.6	
21897	Modify and interconnect existing traffic signals from Davey Glen Road to 41st Avenue and 31st Avenue to Millbrae	$5.8	Funded by State Highway Operation and Protection Program (SHOPP)
94100	US 101 auxiliary lanes from Marsh Road to Route 92	$59.9	Measure A sales tax project
94105	BART-to-San Francisco International Airport (SFO) extension	$1,482.4	Project is under construction.
94643	Widen Route 92 between Route 1 and Half Moon Bay city limits	$16.6	Includes adding eastbound and westbound lanes.
94644	Route 92 westbound slow vehicle lane between Route 35 and I-280	$32.0	
94656	Upgrade Route 1 (Devil's Slide Tunnel)	$150.0	To be funded through federal Emergency Relief funds.
94664	Caltrain (San Mateo County share) transit operating and capital improvement program (including replacement, rehabilitation, and system enhancements for rolling stock, equipment, fixed facilities and other capital assets). Station improvements (e.g., platforms) are included.	$799.5	Federal, state and local funds (including transit fares) available directly to operator; revenues divided equally among the three Joint Powers Board counties; capital shortfall remains (see Track 1)
98204	Construct Route 1 northbound and southbound lanes from Fassler Avenue to Westport Drive in Pacifica	$6.5	

SAN MATEO COUNTY PROJECTS—TRACK 1

Attachment A

RTP REFERENCE NUMBER	TRACK 1 PROJECT/PROGRAM	TOTAL PROJECT COSTS	EXISTING[1] FUNDING	TRACK 1[2] FUNDS	NOTES
		In millions of 2001 dollars			
	SAN MATEO COUNTY-WIDE				
94093	Metropolitan Transportation System (MTS) streets and roads pavement rehabilitation shortfall (see Committed projects)	$8.8	$0.0	$8.8	
98501	Non-MTS streets and roads pavement rehabilitation shortfall	$107.3	$0.0	$88.0	Remaining shortfall to be funded in Blueprint
98554	Transportation for Livable Communities – county program	$13.1	$0.0	$13.1	County share of regional program for community development projects linked to transportation
98563	Surface Transportation Program planning funds for the county	$8.8	$0.0	$8.8	
21624	Transit-Oriented Development Incentives Program	$31.3	$0.0	$31.3	
	PENINSULA				
21343	Caltrain Downtown Extension/Transbay Terminal Replacement	$1,885.0	$1,600.0	$285.0	Reflects total costs & revenues. "Existing Funding" assumes $27 million in local sales tax funding from San Mateo County; Track 1 assumes $23 million from San Francisco (San Francisco will explore contributions from other counties benefiting from extensions/terminal), $203 million from bridge tolls and $59 million from ITIP
21602*	US 101/Broadway interchange reconstruction	$57.5	$15.0	$42.5	
21603*	US 101/Woodside Road interchange improvements	$67.0	$7.0	$60.0	
21604	US 101 auxiliary lanes from Sierra Point to San Francisco County line	$3.3	$1.7	$1.6	
21606*	US 101/ Willow Road interchange reconstruction	$24.5	$12.5	$12.0	
21607*	US 101/University Avenue interchange reconstruction	$35.3	$3.0	$32.3	
21608*	US 101 auxiliary lanes from Marsh Road to Santa Clara County line	$32.6	$16.6	$16.0	
21610*	US 101 auxiliary lanes from San Bruno Avenue to Grand Avenue	$12.3	$6.3	$6.0	
21627*	Caltrain electrification from San Francisco to Gilroy	$602.0	$440.0	$162.0	Reflects total costs and revenues; Track 1 assumes at least $47 million from San Francisco, $65 million in ITIP and $50 million in CARB/AB 434 funds; final distribution of revenues among the JPB counties subject to negotiation by the JPB

Continues on next page

* Denotes projects that will be completed and operational by 2010 for federal air quality conformity purposes.

[1] **Existing Funding** refers to funds that are committed or are considered to be reasonably available in the short term but which do not in themselves fully cover project costs. This category includes local funding from sales taxes, development impact fees and other sources, as well as already programmed state and federal funds.

[2] **Track 1 Funds** refers to discretionary state and federal funds anticipated to be available over the long term of the RTP (and not already programmed in "Existing Funding").

SAN MATEO COUNTY PROJECTS—TRACK 1

RTP REFERENCE NUMBER	TRACK 1 PROJECT/PROGRAM	TOTAL PROJECT COSTS	EXISTING[1] FUNDING	TRACK 1[2] FUNDS	NOTES
		In millions of 2001 dollars			
	PENINSULA (continued)				
21632	Route 92 from US 101 to I-280: add westbound passing lane	$81.6	$0.0	$81.6	
98176*	US 101 auxiliary lanes from Third Avenue to Millbrae and US 101/Peninsula Avenue interchange reconstruction	$87.0	$60.9	$26.1	Assumes $15 million in state ITIP funding
98567	BART capital program shortfall – see Committed projects (excludes seismic program and replacement of rehabilitated A/B cars)	$41.8	$0.0	$41.8	County share based on population
98568	Caltrain capital replacement program shortfall (San Mateo County share) – see Committed projects	$47.9	$26.0	$21.9	Cost of project divided equally among the three Joint Powers Board counties; local funding commitment from county transportation sales tax measure consistent with Countywide Plan.
	TRANSBAY: SAN MATEO-HAYWARD AND DUMBARTON BRIDGES				
21618*	Dumbarton rail bridge rehabilitation (San Mateo County share)	$71.9	$60.0	$11.9	Assumes $11.9 million in state ITIP funding; San Mateo share funded through Measure A; companion to Alameda County project #21194 and Santa Clara County project #21792. Operating plan TBD by counties.

* Denotes projects that will be completed and operational by 2010 for federal air quality conformity purposes.

[1] **Existing Funding** refers to funds that are committed or are considered to be reasonably available in the short term but which do not in themselves fully cover project costs. This category includes local funding from sales taxes, development impact fees and other sources, as well as already programmed state and federal funds.

[2] **Track 1 Funds** refers to discretionary state and federal funds anticipated to be available over the long term of the RTP (and not already programmed in "Existing Funding").

SAN MATEO COUNTY BLUEPRINT PROJECTS

RTPID	County	2001Project_Program	2001InvestmentType	Total Project Costs	Existing Funding	Blueprint2001CMA
98528	San Mateo	Seismic retrofit and upgrade of local bridges and overpasses (shortfall)	Blueprint	$21.90	$0.00	$21.90
98203	San Mateo	Widen Route 1 from 2 to 4 Lanes within the Half Moon Bay City Limits	Blueprint	$32.10	$3.70	$28.40
98507	San Mateo	Local streets and roads non-pavement maintenance (shortfall)	Blueprint	$113.10	$0.00	$113.10
21611	San Mateo	Bayfront Expressway extension from Marsh Road to Woodside Road (4 lanes)	Blueprint	$60.00	$0.00	$60.00
21612	San Mateo	Route 84 connector from Dumbarton Bridge to US 101 in Palo Alto	Blueprint	$0.00	$0.00	$0.00
21613	San Mateo	Route 92 improvements, includes uphill passing lane from US 101 to 280	Blueprint	$81.60	$9.40	$71.90
21614	San Mateo	101 Candlestick interchange reconstruction	Blueprint	$45.40	$4.50	$40.90
21615	San Mateo	Widen Route 280 eastbound by one lane from eastbound Route 1 to southbound Route 280 and Serramonte Boulevard	Blueprint	$39.80	$4.10	$35.70
21616	San Mateo	Route 280 Crestview Drive connection	Blueprint	$0.00	$0.00	$0.00
21937	San Mateo	Various US 101 interchange improvements which facilitate ramp metering	Blueprint	$54.60	$0.00	$54.60
21938	San Mateo	High priority Caltrain grade separations	Blueprint	$0.00	$0.00	$0.00
21939	San Mateo	Widen Route 92 between US 101 and I-280 from 4 lanes to 6 lanes	Blueprint	$100.00	$0.00	$100.00
21619	San Mateo	Caltrain Express Tracks (Phase 2) (San Mateo County share)	Blueprint	$85.70	$0.00	$85.70
21620	San Mateo	Caltrain Express Tracks (Phase 3) (San Mateo County share)	Blueprint	$75.30	$0.00	$75.30
21621	San Mateo	Caltrain Additional Rolling Stock (San Mateo County share)	Blueprint	$48.30	$0.00	$48.30
21623	San Mateo	Additional Caltrain local station improvements (in San Mateo County)	Blueprint	$6.80	$0.00	$6.80
21625	San Mateo	Caltrain Grade Separations (Phase 2) (San Mateo County share)	Blueprint	$8.00	$0.00	$8.00

21628	San Mateo	Caltrain Grade Separations (Phase 3) (San Mateo County share)	Blueprint	$425.00	$0.00	$425.00
21629	San Mateo	Caltrain San Francisco Downtown extension (San Mateo County share)	Blueprint	$236.60	$0.00	$236.60
21630	San Mateo	Expansion of SamTrans Express Service	Blueprint	$0.00	$0.00	$0.00
21631	San Mateo	Bicycle and pedestrian projects	Blueprint	$19.00	$0.00	$19.00
21978	San Mateo	Caltrain: Dumbarton commuter rail service from Newark to Millbrae and San Jose	Blueprint	$0.00	$0.00	$0.00

Appendix I

Checklist for Modeling Consistency

C/CAG

CITY/COUNTY ASSOCIATION OF GOVERNMENTS
OF SAN MATEO COUNTY

Atherton ! Belmont ! Brisbane ! Burlingame ! Colma ! Daly City ! East Palo Alto ! Foster City ! Half Moon Bay ! Hillsborough ! Menlo Park ! Millbrae
Pacifica ! Portola Valley ! Redwood City ! San Bruno ! San Carlos ! San Mateo ! San Mateo County ! South San Francisco ! Woodside

January 10, 2002

Chuck Purvis
Metropolitan Transportation Commission
101 Eighth Street
Oakland, CA 94607-4700

Dear Chuck:

Enclosed is the completed Model Consistency Checklist in compliance with MTC Resolution 3000 revised on May 11, 2001. I can be reached at 650 599-1465 or wmartone@co.sanmateo.ca.us if you have any questions.

Sincerely,

Walter Martone

Cc: Trent Lethco
Jill Hough

555 COUNTY CENTER, REDWOOD CITY, CA 94063 PHONE: 650.599.1406 FAX: 650.361.8227

Hexagon Transportation Consultants

40 South Market Street, Suite 600 • San Jose, California 95113 • (408) 971-6100 • Fax (408) 971-6102

MEMORANDUM TO: Walter Martone
City/County Association of Governmants

FROM: Jill Hough

DATE: January 9, 2002

SUBJECT: ***MTC Model Consistency Checklist (2001/2002) for the San Mateo Congestion Management Program***

The items presented in the attached package address the requirements of the MTC Checklist for model consistency for CMA Congestion Management Programs (CMP's). The items are presented according to the format specified in attachment "B"of Resolution Number 3000, originally adopted in June 1997 and revised on May 11, 2001.

MTC Checklist for Modeling Consistency for CMP's

1. General Approach to Travel Demand Modeling by the CMA

The model for the San Mateo City/County Association of Governments is a focused model of the MTC regional travel demand model. It was initially calibrated for the year 1990 by making adjustments to distribution-related k-factors and gravity model coefficients, modal constants related to mode choice, and validating against 1990 ground counts. More recently the model was updated with ABAG Projections '00 land use data and re-validated against 2000 ground counts for the purpose of supporting countywide transportation planning, such as the update to the San Mateo Countywide Transportation Plan (2025) and the Caltrain 2020 Strategic Plan.

A summary of the enhanced and/or updated model components follows:

- The zone system in Alameda and Contra Costa Counties were expanded to conform to the MTC 1099 zone system;
- The MTC model formulations to estimate households by workers and auto ownership (WHHAO) were developed and integrated into the C/CAG model system;
- The distribution and Home-Based Work Mode Choice models were recalibrated;
- The Trip Generation models and the Mode Choice models for Home-Based Shop/Other, Home-Based Social Recreational, and Non Home Based trips were completely restructured to conform to the MTC Baycast models;
- The AM and PM models were expanded to 3 hours (instead of one hour) and were validated against Year 2000 ground counts; and
- The transit validation for Caltrain stations, San Mateo County BART stations, and Samtrans lines were updated to Year 2000.

The methodology that was followed was thoroughly discussed with and approved by MTC staff at the initiation of the effort.

2. Demographic/Economic/Land Use Forecasts

The latest available projections at the project's inception (January 2000) was ABAG Projections '00. These demographic projections were disaggregated to the San Mateo County zones. A comparison of population, households, jobs, and employed residents between ABAG and the CMP databases is presented in Table 2-1.

3. Pricing Assumptions

The model was developed using MTC's assumptions regarding auto operating costs, parking costs, transit fares, and bridge tolls.

4. Network Assumptions

The transportation network includes MTC's regional highway and transit network assumptions for external counties in the Bay Area. Many more roadway facilities such as major and minor arterials and some key collectors are included in the transportation network within San Mateo County.

5. Auto Ownership Assumptions

The models developed by MTC that estimate households by number of workers and auto ownership were implemented within the C/CAG travel demand model system. Previously, numbers of autos and percentages of zero-auto households were inputs to the model (and were obtained from MTC). These models are nested-logit formulations. The number of households by vehicle ownership level (0, 1, 2+ vehicles/household), and autos per household summaries are presented in Table 5-1.

6. Trip Generation

The MTC-BAYCAST trip generation models for home-based work, non-work, and non-home-based trips were implemented for the San Mateo County zones. The trip productions and attractions by county are summarized in Tables 6-1 and 6-2, respectively. Also included in the table are the comparisons with the MTC trip generation results and the differences between the two models. None of the tolerance thresholds are exceeded.

7. Trip Rate Analysis

The trip rate analysis, including home-based work trips per employed resident, home-based non-work trips per household, and non-home-based trips per job are presented in Table 7-1.

8. Subregional Adjustment Factors

Because the trip generation and distribution models were re-calibrated for ABAG Projections '00 and expanded zones in Alameda and Contra Costa Counties, adjustment factors at the sub-regional level were not needed in order to achieve consistency with MTC.

9. Trip Distribution – Attraction Balancing Analysis

The work trip distribution models were calibrated to the 1990 MTC person trip distributions. The models are implemented as gravity models with coefficients. These coefficients were re-estimated to yield average trip lengths that were within one-minute of the average trip lengths associated with the MTC trip distribution models. K-factors were re-estimated to achieve close matches of county-county trips between the MTC model and the C/CAG model. The distribution models were implemented with sufficient iterations of matrix balancing in order to reach

"closure". The comparison of the attractions from the distribution model to the attractions from the trip generation model (for each trip purpose) is presented in Table 9-1.

10. Trip Distribution – County to County Trip Tables

A comparison of the county-to-county trip tables for each trip purpose is presented in Table 10-1. The tables also indicate the tolerances for consistency and identify that no thresholds for consistency are exceeded.

11. Trip Distribution – District to District Trip Tables

A comparison of the district to-district trip tables within San Mateo County for each trip purpose is presented in Table 11-1.

12. Mode Choice: County-to-County and District-to-District Trip Tables by Mode

A comparison of the county-to-county modal trip tables for each trip purpose is presented in Table 12-1. The tables also indicate the tolerances for consistency and identify whether any thresholds for consistency are exceeded. None of the tolerance thresholds are exceeded for a single county-to-county trip interaction.

For Home-Based Work trips by mode, the threshold is exceeded for the total transit trips in the region (18% versus 10%), but the total number of modeled transit trips is within 10,000 of the observed transit trips. Similarly, the threshold is exceeded for the total 2-Person Shared/Ride trips in the region (11% versus 10%), but the total number of modeled transit trips is within 10,000 of the observed transit trips. Other comparisons for of trips by mode indicate several instances where the tolerance threshold is exceeded for the region (but not for any single county-to-county interaction), but they account for a small minority; and the magnitude of trips by which the model deviates from the MTC "observed" is a number within or close to 10,000 (daily) trips.

A comparison of the district to-district modal trip tables within San Mateo County for each trip purpose is presented in Table 12-2.

13.Mode Choice: County-to-County and District-to-District Vehicle Trip Tables

A summary of the county-to-county vehicle trip tables was presented in Tables 12-1 through 12-8. The average vehicle occupancies that were applied to the home-based shop/other and home-based social/recreational person trips was 2.0 for 2-person trips and 3.5 for 3+ person trips. The average vehicle occupancies that were applied to the non home-based person trips was 2.0 for vehicle passenger trips.

14.Traffic Assignment Methodology

The trip assignment model is based on the assignment model from the MTC regional model. The speed and capacity relationships of the transportation network links are expressed as volume delay functions that are similar to the curved originally derived by the Bureau of Public Roads (BPR). However, they have been modified to reflect steeper increases in delay at very high levels of volume (i.e. when the volume-to-capacity ratios are higher than 1.0) then would be dictated by the original BRP curves. The assignment process is governed by travel time equilibrium for all the vehicles of the demand matrix. The demand is static in that every vehicle of the demand matrix is assigned to the highway network regardless of over-congestion of all available routes. Equilibrium is maintained even under these over-congested circumstances.

15.Traffic Assignment: Peaking Factors

The vehicle occupancy assumptions are consistent with those of the MTC regional model. The vehicle occupancy factors for each trip purpose are applied after mode choice and before highway assignment, during the process of factoring and combining trip tables to derive AM and PM peak three-hour vehicle trip tables.

The peaking factors are used to derive the portion of the daily travel demand that occurs within the peak three-hour. The traffic assignment model for San Mateo County is based on the AM and PM peak three hours rather than a single peak hour. The regional peaking factors were used as a starting point for the process of validating to a set ground counts that were collected in 2000, representing the hours or 6 AM to 9AM and 4PM to 7 PM. These peaking factors were adjusted to account for more specific peak factors for trips into, out of, and through San Mateo County during the AM and PM peak periods. The adjustment to the peaking factors were made on a transportation-planning district basis and had the effect of increasing the total number or trips that occurred in the AM and PM peak three hours in some parts of the county while decreasing the total number or trips that occurred in the AM and PM peak three hours in other parts of the county.

Bay Area County Land Use Totals Based on Disaggregated Data

County	Employed Residents	Households	Population	Manufacturing Employment	Other Employment	Retail Employment	Service Employment	Total Employment	Average Income	Total Acres	Net Resident'l Acres	Net Commerc'l Acres
San Francisco	400,673	315,756	780,781	39,968	182,741	78,217	259,811	587,002	53,295	29,756	15,745	8,462
San Mateo	384,906	253,786	729,502	39,222	102,960	60,847	132,959	363,306	73,011	286,418	41,782	19,104
Santa Clara	902,315	569,541	1,748,728	285,520	153,055	142,089	366,398	1,015,962	67,957	826,061	110,670	47,964
Alameda	666,303	507,371	1,421,003	85,602	173,992	109,415	247,570	666,844	53,381	473,331	79,314	46,083
Contra Costa	457,990	339,222	927,897	31,018	99,527	65,244	128,832	339,168	62,093	462,204	92,699	33,769
Solano	176,997	128,487	397,901	11,416	51,421	26,789	35,073	132,450	50,088	533,017	28,580	19,176
Napa	57,301	46,630	124,700	7,461	9,092	10,248	22,839	56,253	53,979	481,205	12,503	6,638
Sonoma	220,401	170,958	450,800	24,477	41,611	35,967	67,378	184,519	53,886	1,013,551	68,740	14,627
Marin	128,598	99,109	246,700	6,501	27,753	24,662	51,597	116,703	80,883	332,743	30,625	8,462
Total	**3,395,484**	**2,430,861**	**6,828,012**	**531,185**	**842,152**	**553,478**	**1,312,458**	**3,462,207**	**548,572**	**4,438,286**	**480,658**	**204,285**

Bay Area County Land Use Totals Based on MTC Data

County	Employed Residents	Households	Population	Manufacturing Employment	Other Employment	Retail Employment	Service Employment	Total Employment	Average Income	Total Acres	Net Resident'l Acres	Net Commerc'l Acres
San Francisco	403,637	317,975	785,888	39,941	182,372	78,046	260,230	586,926	53,544	29,873	15,836	8,476
San Mateo	384,906	253,786	729,502	39,222	102,960	60,847	132,959	363,306	71,656	285,451	41,782	18,167
Santa Clara	897,095	565,719	1,739,811	285,485	151,828	141,401	363,895	1,012,643	66,691	825,400	110,201	47,848
Alameda	666,303	507,371	1,421,003	85,602	173,992	109,415	247,570	666,844	53,381	473,331	79,314	46,083
Contra Costa	457,990	339,222	927,897	31,018	99,527	65,244	128,832	339,168	63,989	462,204	92,699	33,769
Solano	176,997	128,487	397,901	11,416	51,421	26,789	35,073	132,450	48,146	533,017	28,580	19,176
Napa	57,301	46,630	124,700	7,461	9,092	10,248	22,839	56,253	55,517	481,205	12,503	6,638
Sonoma	220,401	170,958	450,800	24,477	41,611	35,967	67,378	184,519	53,207	1,013,551	68,740	14,627
Marin	128,598	99,109	246,700	6,501	27,753	24,662	51,597	116,703	83,641	332,743	30,625	8,462
Total	**3,393,228**	**2,429,257**	**6,824,202**	**531,123**	**840,556**	**552,619**	**1,310,373**	**3,458,812**	**549,772**	**4,436,775**	**480,280**	**203,246**

Differences Between Land Use Totals

County	Employed Residents	Households	Population	Manufacturing Employment	Other Employment	Retail Employment	Service Employment	Total Employment	Average Income	Total Acres	Net Resident'l Acres	Net Commerc'l Acres
San Francisco	-0.7%	-0.7%	-0.6%	0.1%	0.2%	0.2%	-0.2%	0.0%	-0.5%	-0.4%	-0.6%	-0.2%
San Mateo	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	0.3%	0.0%	5.2%
Santa Clara	0.6%	0.7%	0.5%	0.0%	0.8%	0.5%	0.7%	0.3%	1.9%	0.1%	0.4%	0.2%
Alameda	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Contra Costa	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-3.0%	0.0%	0.0%	0.0%
Solano	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	0.0%	0.0%	0.0%
Napa	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-2.8%	0.0%	0.0%	0.0%
Sonoma	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%
Marin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-3.3%	0.0%	0.0%	0.0%
Total	**0.1%**	**0.1%**	**0.1%**	**0.0%**	**0.2%**	**0.2%**	**0.2%**	**0.1%**	**-0.2%**	**0.0%**	**0.1%**	**0.5%**

Table 5-1

Auto Ownership Analysis

Trip Generation	Households by Vehicle Ownership 0	1	2+	Total Households	Total Autos	Autos per Household
San Francisco	96,353	114,341	94,890	305,584	336,029	1.10
San Mateo	25,431	82,730	133,755	241,916	421,352	1.74
Santa Clara	43,306	163,584	313,291	520,181	878,169	1.69
Alameda	62,335	173,669	243,514	479,518	768,533	1.60
Contra Costa	10,517	81,728	208,043	300,288	610,511	2.03
Solano	4,352	33,379	75,321	113,052	222,883	1.97
Napa	1,590	12,733	26,989	41,312	81,473	1.97
Sonoma	5,936	47,870	95,205	149,011	287,573	1.93
Marin	2,288	23,862	68,856	95,006	192,369	2.02
All Counties	252,108	733,896	1,259,864	2,245,868	3,798,892	1.69

Note: The average number of vehicles per household for 2+ vehicle owners was averaged for the Superdistricts within each county.

Table 6-1

Trip Generation: Comparison of Trip Productions by County

Trip Generation For County:	Home-Based Work Trip Productions Modeled	Home-Based Work Trip Productions Desired	Difference Percent	Difference Numeric	Threshold A: 1% of Desired	Threshold B: 10,000 Trips	Governing Threshold	Threshold Exceeded?
San Francisco	499,287	501,993	-0.5%	-2,706	5,020	10,000	10,000	no
San Mateo	513,717	510,078	0.7%	3,639	5,101	10,000	10,000	no
Santa Clara	1,151,222	1,151,767	0.0%	-545	11,518	10,000	11,518	no
Alameda	892,765	876,738	1.8%	16,027	8,767	10,000	10,000	no
Contra Costa	587,679	585,185	0.4%	2,494	5,852	10,000	10,000	no
Solano	217,470	216,881	0.3%	589	2,169	10,000	10,000	no
Napa	71,573	71,175	0.6%	398	712	10,000	10,000	no
Sonoma	266,794	265,287	0.6%	1,507	2,653	10,000	10,000	no
Marin	175,425	179,281	-2.2%	-3,856	1,793	10,000	10,000	no
All Counties	4,375,932	4,358,385	0.4%	17,547	43,584	10,000	43,584	no

Trip Generation For County:	Home-Based Shop/Other Trip Productions Modeled	Home-Based Shop/Other Trip Productions Desired	Difference Percent	Difference Numeric	Threshold A: 1% of Desired	Threshold B: 10,000 Trips	Governing Threshold	Threshold Exceeded?
San Francisco	396,600	389,581	1.8%	7,019	3,896	10,000	10,000	no
San Mateo	519,032	511,460	1.5%	7,572	5,115	10,000	10,000	no
Santa Clara	1,233,802	1,230,361	0.3%	3,441	12,304	10,000	12,304	no
Alameda	795,373	792,837	0.3%	2,536	7,928	10,000	10,000	no
Contra Costa	573,395	573,406	0.0%	-11	5,734	10,000	10,000	no
Solano	224,724	226,896	-1.0%	-2,172	2,269	10,000	10,000	no
Napa	76,490	77,686	-1.5%	-1,196	777	10,000	10,000	no
Sonoma	273,932	271,660	0.8%	2,272	2,717	10,000	10,000	no
Marin	151,655	154,498	-1.8%	-2,843	1,545	10,000	10,000	no
All Counties	4,245,003	4,228,385	0.4%	16,618	42,284	10,000	42,284	no

Trip Generation For County:	Home-Based Social/Recreational Trip Productions Modeled	Home-Based Social/Recreational Trip Productions Desired	Difference Percent	Difference Numeric	Threshold A: 1% of Desired	Threshold B: 10,000 Trips	Governing Threshold	Threshold Exceeded?
San Francisco	168,875	163,129	3.5%	5,746	1,631	10,000	10,000	no
San Mateo	251,692	244,392	3.0%	7,300	2,444	10,000	10,000	no
Santa Clara	574,166	562,043	2.2%	12,123	5,620	10,000	10,000	no
Alameda	311,460	310,179	0.4%	1,281	3,102	10,000	10,000	no
Contra Costa	248,137	249,234	-0.4%	-1,097	2,492	10,000	10,000	no
Solano	90,900	90,731	0.2%	169	907	10,000	10,000	no
Napa	29,403	29,371	0.1%	32	294	10,000	10,000	no
Sonoma	110,569	108,768	1.7%	1,801	1,088	10,000	10,000	no
Marin	72,620	72,833	-0.3%	-213	728	10,000	10,000	no
All Counties	1,857,822	1,830,680	1.5%	27,142	18,307	10,000	18,307	no

Trip Generation For County:	Non Home Based Trip Productions Modeled	Non Home Based Trip Productions Desired	Difference Percent	Difference Numeric	Threshold A: 1% of Desired	Threshold B: 10,000 Trips	Governing Threshold	Threshold Exceeded?
San Francisco	533,926	537,494	-0.7%	-3,568	5,375	10,000	10,000	no
San Mateo	590,714	588,736	0.3%	1,978	5,887	10,000	10,000	no
Santa Clara	1,282,427	1,274,410	0.6%	8,017	12,744	10,000	12,744	no
Alameda	859,496	852,663	0.8%	6,833	8,527	10,000	10,000	no
Contra Costa	522,237	517,759	0.9%	4,478	5,178	10,000	10,000	no
Solano	196,619	194,488	1.1%	2,131	1,945	10,000	10,000	no
Napa	73,504	72,605	1.2%	899	726	10,000	10,000	no
Sonoma	252,198	250,291	0.8%	1,907	2,503	10,000	10,000	no
Marin	171,257	169,549	1.0%	1,708	1,695	10,000	10,000	no
All Counties	4,482,378	4,457,995	0.5%	24,383	44,580	10,000	44,580	no

Trip Generation: Comparison of Trip Attractions by County

Trip Generation For County:	Home-Based Work: Trip Attractions Modeled	Home-Based Work: Trip Attractions Desired	Difference Percent	Difference Numeric	Threshold A: 1% of Desired	Threshold B: 10,000 Trips	Governing Threshold	Threshold Exceeded?
San Francisco	780,401	775,321	0.7%	5,080	7,753	10,000	10,000	no
San Mateo	454,180	453,415	0.2%	765	4,534	10,000	10,000	no
Santa Clara	1,242,575	1,230,532	1.0%	12,043	12,305	10,000	12,305	no
Alameda	846,302	849,028	-0.3%	-2,726	8,490	10,000	10,000	no
Contra Costa	452,642	447,465	1.2%	5,177	4,475	10,000	10,000	no
Solano	163,922	165,595	-1.0%	-1,673	1,656	10,000	10,000	no
Napa	66,941	67,417	-0.7%	-476	674	10,000	10,000	no
Sonoma	225,256	225,451	-0.1%	-195	2,255	10,000	10,000	no
Marin	143,713	144,161	-0.3%	-448	1,442	10,000	10,000	no
All Counties	4,375,932	4,358,385	0.4%	17,547	43,584	10,000	43,584	no

Trip Generation For County:	Home-Based Shop/Other: Trip Attractions Modeled	Home-Based Shop/Other: Trip Attractions Desired	Difference Percent	Difference Numeric	Threshold A: 1% of Desired	Threshold B: 10,000 Trips	Governing Threshold	Threshold Exceeded?
San Francisco	414,329	412,570	0.4%	1,759	4,126	10,000	10,000	no
San Mateo	490,956	492,443	-0.3%	-1,487	4,924	10,000	10,000	no
Santa Clara	1,274,776	1,259,680	1.2%	15,096	12,597	10,000	12,597	no
Alameda	821,522	813,237	1.0%	8,285	8,132	10,000	10,000	no
Contra Costa	529,949	534,864	-0.9%	-4,915	5,349	10,000	10,000	no
Solano	224,701	226,881	-1.0%	-2,180	2,269	10,000	10,000	no
Napa	73,304	74,310	-1.4%	-1,006	743	10,000	10,000	no
Sonoma	267,438	265,476	0.7%	1,962	2,655	10,000	10,000	no
Marin	148,385	148,924	-0.4%	-539	1,489	10,000	10,000	no
All Counties	4,245,360	4,228,385	0.4%	16,975	42,284	10,000	42,284	no

Trip Generation For County:	Home-Based Social/Recreational: Trip Attractions Modeled	Home-Based Social/Recreational: Trip Attractions Desired	Difference Percent	Difference Numeric	Threshold A: 1% of Desired	Threshold B: 10,000 Trips	Governing Threshold	Threshold Exceeded?
San Francisco	205,221	200,958	2.1%	4,263	2,010	10,000	10,000	no
San Mateo	228,508	223,901	2.1%	4,607	2,239	10,000	10,000	no
Santa Clara	583,214	572,903	1.8%	10,311	5,729	10,000	10,000	no
Alameda	320,268	313,983	2.0%	6,285	3,140	10,000	10,000	no
Contra Costa	231,973	230,452	0.7%	1,521	2,305	10,000	10,000	no
Solano	88,471	87,403	1.2%	1,068	874	10,000	10,000	no
Napa	30,583	30,016	1.9%	567	300	10,000	10,000	no
Sonoma	97,118	99,025	-1.9%	-1,907	990	10,000	10,000	no
Marin	72,465	72,039	0.6%	426	720	10,000	10,000	no
All Counties	1,857,821	1,830,680	1.5%	27,141	18,307	10,000	18,307	no

Trip Generation For County:	Non Home Based: Trip Attractions Modeled	Non Home Based: Trip Attractions Desired	Difference Percent	Difference Numeric	Threshold A: 1% of Desired	Threshold B: 10,000 Trips	Governing Threshold	Threshold Exceeded?
San Francisco	511,444	511,027	0.1%	417	5,110	10,000	10,000	no
San Mateo	590,431	592,013	-0.3%	-1,582	5,920	10,000	10,000	no
Santa Clara	1,291,135	1,283,416	0.6%	7,719	12,834	10,000	12,834	no
Alameda	864,433	861,007	0.4%	3,426	8,610	10,000	10,000	no
Contra Costa	526,075	525,129	0.2%	946	5,251	10,000	10,000	no
Solano	202,341	193,715	4.5%	8,626	1,937	10,000	10,000	no
Napa	74,115	71,918	3.1%	2,197	719	10,000	10,000	no
Sonoma	252,577	248,959	1.5%	3,618	2,490	10,000	10,000	no
Marin	169,828	170,811	-0.6%	-983	1,708	10,000	10,000	no
All Counties	4,482,379	4,457,995	0.5%	24,384	44,580	10,000	44,580	no

Table 7-1

Trip Rate Analysis

County	HBW Trips per Employed Res	HBNW Trips per Household	NHB Trips per Job
San Francisco	1.3	1.9	0.9
San Mateo	1.5	3.2	1.8
Santa Clara	1.4	3.5	1.4
Alameda	1.4	2.3	1.3
Contra Costa	1.4	2.7	1.7
Solano	1.3	2.8	1.6
Napa	1.4	2.6	1.5
Sonoma	1.4	2.6	1.5
Marin	1.4	2.4	1.6
All Counties	**1.4**	**2.7**	**1.4**

Note: HBNW Trips per Household does not include school trips

Table 9-1

Attraction Balancing Analysis

County/District	Trip Attractions		Difference	
	Distribution	Generation	Percent	Numeric
Home-Based Work				
San Francisco	769,486	780,401	-1.4%	-10,915
San Mateo	454,033	454,180	0.0%	-147
Santa Clara	1,242,436	1,242,575	0.0%	-139
Alameda	857,045	846,302	1.3%	10,743
Contra Costa	452,638	452,642	0.0%	-4
Solano	163,920	163,922	0.0%	-2
Napa	66,940	66,941	0.0%	-1
Sonoma	225,256	225,256	0.0%	0
Marin	143,714	143,713	0.0%	1
Total Bay Area	**4,375,468**	**4,375,932**	**0.0%**	**-464**
Home-Based Shop/Other				
San Francisco	412,000	414,329	-0.6%	-2,329
San Mateo	490,993	490,956	0.0%	37
Santa Clara	1,274,628	1,274,776	0.0%	-148
Alameda	823,677	821,522	0.3%	2,155
Contra Costa	529,946	529,949	0.0%	-3
Solano	224,702	224,701	0.0%	1
Napa	73,303	73,304	0.0%	-1
Sonoma	267,438	267,438	0.0%	0
Marin	148,382	148,385	0.0%	-3
Total Bay Area	**4,245,069**	**4,245,360**	**0.0%**	**-291**
Home-Based Social/Recreational				
San Francisco	203,201	205,221	-1.0%	-2,020
San Mateo	228,511	228,508	0.0%	3
Santa Clara	583,217	583,214	0.0%	3
Alameda	322,286	320,268	0.6%	2,018
Contra Costa	231,971	231,973	0.0%	-2
Solano	88,473	88,471	0.0%	2
Napa	30,582	30,583	0.0%	-1
Sonoma	97,116	97,118	0.0%	-2
Marin	72,462	72,465	0.0%	-3
Total Bay Area	**1,857,819**	1,857,821	**0.0%**	**-2**
Non Home-Based				
San Francisco	504,035	511,444	-1.4%	-7,409
San Mateo	590,440	590,431	0.0%	9
Santa Clara	1,291,129	1,291,135	0.0%	-6
Alameda	871,838	864,433	0.9%	7,405
Contra Costa	526,070	526,075	0.0%	-5
Solano	202,339	202,341	0.0%	-2
Napa	74,114	74,115	0.0%	-1
Sonoma	252,575	252,577	0.0%	-2
Marin	169,824	169,828	0.0%	-4
Total Bay Area	**4,482,364**	**4,482,379**	**0.0%**	**-15**

1990 Distribution of San Mateo County Home-Based Work Productions

County of Attraction	Trips		Difference		Threshold A: 5% of	Threshold B: 10,000	Governing	Threshold
	Modeled	Desired	Percent	Numeric	Desired	Trips	Threshold	Exceeded?
San Francisco	123,733	119,833	3.3%	3,900	5,992	10,000	10,000	no
San Mateo	273,263	282,577	-3.3%	-9,314	14,129	10,000	14,129	no
Santa Clara	75,808	77,668	-2.4%	-1,860	3,883	10,000	10,000	no
Alameda	19,383	20,020	-3.2%	-637	1,001	10,000	10,000	no
Contra Costa	4,403	4,612	-4.5%	-209	231	10,000	10,000	no
Solano	2,372	371	539.4%	2,001	19	10,000	10,000	no
Napa	2,241	90	2390.0%	2,151	5	10,000	10,000	no
Sonoma	6,190	238	2500.8%	5,952	12	10,000	10,000	no
Marin	6,084	2,175	179.7%	3,909	109	10,000	10,000	no
Total Bay Area	513,477	507,584	1.2%	5,893	25,379	10,000	25,379	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County; "Desired Trips" represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "5% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Numeric Difference" is greater than the "Governing Threshold"

1990 Distribution of San Mateo County Home-Based Work Attractions

County of Production	Trips		Difference		Threshold A: 5% of	Threshold B: 10,000	Governing	Threshold
	Modeled	Desired	Percent	Numeric	Desired	Trips	Threshold	Exceeded?
San Francisco	49,996	54,505	-8.3%	-4,509	2,725	10,000	10,000	no
San Mateo	273,263	282,577	-3.3%	-9,314	14,129	10,000	14,129	no
Santa Clara	42,776	44,957	-4.9%	-2,181	2,248	10,000	10,000	no
Alameda	45,380	47,948	-5.4%	-2,568	2,397	10,000	10,000	no
Contra Costa	12,091	12,608	-4.1%	-517	630	10,000	10,000	no
Solano	6,182	4,214	46.7%	1,968	211	10,000	10,000	no
Napa	3,585	254	1311.4%	3,331	13	10,000	10,000	no
Sonoma	10,908	1,910	471.1%	8,998	96	10,000	10,000	no
Marin	9,852	5,559	77.2%	4,293	278	10,000	10,000	no
Total Bay Area	454,033	454,532	-0.1%	-499	22,727	10,000	22,727	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County; "Desired Trips" represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "5% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Numeric Difference" is greater than the "Governing Threshold"

1990 Distribution of San Mateo County Home-Based Shop Productions

County of Attraction	Trips		Difference		Threshold A: 5% of Desired	Threshold B: 10,000 Trips	Governing Threshold	Threshold Exceeded?
	Modeled	Desired	Percent	Numeric				
San Francisco	46,948	55,528	-15.5%	-8,580	2,776	10,000	10,000	no
San Mateo	403,016	397,641	1.4%	5,375	19,882	10,000	19,882	no
Santa Clara	52,411	48,715	7.6%	3,696	2,436	10,000	10,000	no
Alameda	6,671	6,964	-4.2%	-293	348	10,000	10,000	no
Contra Costa	6,743	1,085	521.5%	5,658	54	10,000	10,000	no
Solano	537	116	362.9%	421	6	10,000	10,000	no
Napa	100	13	669.2%	87	1	10,000	10,000	no
Sonoma	374	31	1106.5%	343	2	10,000	10,000	no
Marin	2,230	1,122	98.8%	1,108	56	10,000	10,000	no
Total Bay Area	519,030	511,215	1.5%	7,815	25,561	10,000	25,561	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County; "Desired Trips" represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "5% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Numeric Difference" is greater than the "Governing Threshold"

1990 Distribution of San Mateo County Home-Based Shop Attractions

County of Production	Trips		Difference		Threshold A: 5% of Desired	Threshold B: 10,000 Trips	Governing Threshold	Threshold Exceeded?
	Modeled	Desired	Percent	Numeric				
San Francisco	48,089	53,209	-9.6%	-5,120	2,660	10,000	10,000	no
San Mateo	403,016	397,641	1.4%	5,375	19,882	10,000	19,882	no
Santa Clara	21,801	25,005	-12.8%	-3,204	1,250	10,000	10,000	no
Alameda	11,333	12,138	-6.6%	-805	607	10,000	10,000	no
Contra Costa	4,353	2,350	85.2%	2,003	118	10,000	10,000	no
Solano	431	322	33.9%	109	16	10,000	10,000	no
Napa	137	93	47.3%	44	5	10,000	10,000	no
Sonoma	476	189	151.9%	287	9	10,000	10,000	no
Marin	1,357	1,399	-3.0%	-42	70	10,000	10,000	no
Total Bay Area	490,993	492,346	-0.3%	-1,353	24,617	10,000	24,617	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County; "Desired Trips" represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "5% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Numeric Difference" is greater than the "Governing Threshold"

1990 Distribution of San Mateo County Home-Based Soc/Rec Productions

County of Attraction	Trips		Difference		Threshold A: 5% of Desired	Threshold B: 10,000 Trips	Governing Threshold	Threshold Exceeded?
	Modeled	Desired	Percent	Numeric				
San Francisco	34,826	39,297	-11.4%	-4,471	1,965	10,000	10,000	no
Sa Mateo	177,016	169,000	4.7%	8,016	8,450	10,000	10,000	no
Santa Clara	30,803	26,972	14.2%	3,831	1,349	10,000	10,000	no
Alameda	5,813	6,133	-5.2%	-320	307	10,000	10,000	no
Contra Costa	1,933	1,028	88.0%	905	51	10,000	10,000	no
Solano	430	166	159.0%	264	8	10,000	10,000	no
Napa	153	54	183.3%	99	3	10,000	10,000	no
Sonoma	204	118	72.9%	86	6	10,000	10,000	no
Marin	528	1,185	-55.4%	-657	59	10,000	10,000	no
Total Bay Area	251,706	243,953	3.2%	7,753	12,198	10,000	12,198	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County; "Desired Trips" represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "5% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Numeric Difference" is greater than the "Governing Threshold"

1990 Distribution of San Mateo County Home-Based Soc/Rec Attractions

County of Production	Trips		Difference		Threshold A: 5% of Desired	Threshold B: 10,000 Trips	Governing Threshold	Threshold Exceeded?
	Modeled	Desired	Percent	Numeric				
San Francisco	21,813	25,787	-15.4%	-3,974	1,289	10,000	10,000	no
San Mateo	177,016	169,000	4.7%	8,016	8,450	10,000	10,000	no
Santa Clara	16,261	18,067	-10.0%	-1,806	903	10,000	10,000	no
Alameda	8,241	7,153	15.2%	1,088	358	10,000	10,000	no
Contra Costa	2,805	1,749	60.4%	1,056	87	10,000	10,000	no
Solano	545	356	53.1%	189	18	10,000	10,000	no
Napa	184	95	93.7%	89	5	10,000	10,000	no
Sonoma	907	735	23.4%	172	37	10,000	10,000	no
Marin	739	961	-23.1%	-222	48	10,000	10,000	no
Total Bay Area	228,511	223,903	2.1%	4,608	11,195	10,000	11,195	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County; "Desired Trips" represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "5% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Numeric Difference" is greater than the "Governing Threshold"

1990 Distribution of San Mateo County Non Home-Based Productions

County of Attraction	Trips		Difference		Threshold A: 5% of Desired	Threshold B: 10,000 Trips	Governing Threshold	Threshold Exceeded?
	Modeled	Desired	Percent	Numeric				
San Francisco	69,427	74,742	-7.1%	-5,315	3,737	10,000	10,000	no
Daly City, Colma, Brisbane	433,118	429,493	0.8%	3,625	21,475	10,000	21,475	no
Santa Clara	61,340	61,798	-0.7%	-458	3,090	10,000	10,000	no
Alameda	16,955	15,872	6.8%	1,083	794	10,000	10,000	no
Contra Costa	5,265	3,060	72.1%	2,205	153	10,000	10,000	no
Solano	1,285	492	161.2%	793	25	10,000	10,000	no
Napa	406	129	214.7%	277	6	10,000	10,000	no
Sonoma	1,176	284	314.1%	892	14	10,000	10,000	no
Marin	1,749	2,314	-24.4%	-565	116	10,000	10,000	no
Total Bay Area	590,721	588,184	0.4%	2,537	29,409	10,000	29,409	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County; "Desired Trips" represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "5% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Numeric Difference" is greater than the "Governing Threshold"

1990 Distribution of San Mateo County Non Home-Based Attractions

County of Production	Trips		Difference		Threshold A: 5% of Desired	Threshold B: 10,000 Trips	Governing Threshold	Threshold Exceeded?
	Modeled	Desired	Percent	Numeric				
San Francisco	82,526	84,453 [1]	-2.3%	-1,927	4,223	10,000	10,000	no
San Mateo	433,118	429,493	0.8%	3,625	21,475	10,000	21,475	no
Santa Clara	56,420	56,033	0.7%	387	2,802	10,000	10,000	no
Alameda	14,464	14,509	-0.3%	-45	725	10,000	10,000	no
Contra Costa	2,241	2,926	-23.4%	-685	146	10,000	10,000	no
Solano	414	560	-26.1%	-146	28	10,000	10,000	no
Napa	149	148	0.7%	1	7	10,000	10,000	no
Sonoma	437	415	5.3%	22	21	10,000	10,000	no
Marin	671	2,508	-73.2%	-1,837	125	10,000	10,000	no
Total Bay Area	590,440	591,045	-0.1%	-605	29,552	10,000	29,552	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County; "Desired Trips" represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "5% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Numeric Difference" is greater than the "Governing Threshold"

[1] The number of non home-based person trips estimated by the MTC model has been previously documented at 42,481, resulting in a difference of 134 trips which is well within the threshold for consistency

Distribution of Intra-County San Mateo Home-Based Work Trips

From Planning Area:		Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
		5	6	7	8	9	10	11	12	
Estimated (San Mateo CMA)										
Daly City, Colma, Brisbane	5	8,457	8,820	2,345	2,526	3,202	1,317	1,189	441	28,297
South San Francisco, San Bruno	6	5,216	15,922	3,897	4,282	4,953	1,914	854	624	37,662
SFO	7	0	0	0	0	0	0	0	0	0
Millbrae, Burlingame, Hillsborough	8	1,717	5,510	2,770	8,138	7,776	2,272	292	751	29,226
San Mateo, Foster City, Belmont, San Carlos	9	2,554	8,148	4,015	9,431	43,272	13,778	593	4,095	85,886
Redwood, Atherton, Menlo Park, E. Palo Alto	10	1,092	3,337	1,552	2,911	13,738	31,946	235	3,666	58,477
Pacifica, Half Moon Bay, Coastal Areas	11	3,169	4,423	1,240	1,516	2,559	1,056	4,945	949	19,857
Woodside, Portola Valley	12	484	1,373	444	1,055	4,180	3,604	445	2,273	13,858
Total County		**22,689**	**47,533**	**16,263**	**29,859**	**79,680**	**55,887**	**8,553**	**12,799**	**273,263**
Desired (MTC)										
Daly City, Colma, Brisbane		8,392	8,671	2,719	2,629	3,211	1,598	1,328	527	29,075
South San Francisco, San Bruno		5,142	15,546	4,488	4,427	4,934	2,307	948	741	38,533
SFO		0	0	0	0	0	0	0	0	0
Millbrae, Burlingame, Hillsborough		1,653	5,254	3,115	8,215	7,564	2,675	316	870	29,662
San Mateo, Foster City, Belmont, San Carlos		2,478	7,831	4,551	9,597	42,425	16,346	648	4,788	88,664
Redwood, Atherton, Menlo Park, E. Palo Alto		989	2,994	1,642	2,765	12,574	35,378	239	4,004	60,585
Pacifica, Half Moon Bay, Coastal Areas		3,191	4,410	1,458	1,600	2,603	1,300	5,601	1,149	21,312
Woodside, Portola Valley		465	1,307	499	1,064	4,060	4,236	481	2,634	14,746
Total County		**22,310**	**46,013**	**18,472**	**30,297**	**77,371**	**63,840**	**9,561**	**14,713**	**282,577**
Estimated (San Mateo CMA) - Desired (MTC)										
Daly City, Colma, Brisbane		65	149	-374	-103	-9	-281	-139	-86	-778
South San Francisco, San Bruno		74	376	-591	-145	19	-393	-94	-117	-871
SFO		0	0	0	0	0	0	0	0	0
Millbrae, Burlingame, Hillsborough		64	256	-345	-77	212	-403	-24	-119	-436
San Mateo, Foster City, Belmont, San Carlos		76	317	-536	-166	847	-2,568	-55	-693	-2,778
Redwood, Atherton, Menlo Park, E. Palo Alto		103	343	-90	146	1,164	-3,432	-4	-338	-2,108
Pacifica, Half Moon Bay, Coastal Areas		-22	13	-218	-84	-44	-244	-656	-200	-1,455
Woodside, Portola Valley		19	66	-55	-9	120	-632	-36	-361	-888
Total County		**379**	**1,520**	**-2,209**	**-438**	**2,309**	**-7,953**	**-1,008**	**-1,914**	**-9,314**

Distribution of San Mateo Home-Based Shop/Other Trips

From Planning Area:		Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
		5	6	7	8	9	10	11	12	
Estimated (San Mateo CMA)										
Daly City, Colma, Brisbane	5	27,729	7,461	3,109	2,379	1,927	534	1,239	121	44,499
South San Francisco, San Bruno	6	19	56,517	8,025	5,980	1,319	75	13	26	71,974
SFO	7	0	0	0	0	0	0	0	0	0
Millbrae, Burlingame, Hillsborough	8	1,006	3,485	4,583	21,278	8,309	974	71	253	39,959
San Mateo, Foster City, Belmont, San Carlos	9	847	2,494	4,183	11,383	87,645	13,868	84	2,998	123,502
Redwood City, Atherton, Menlo Park, E. Palo Alto	10	297	636	841	1,709	18,399	50,815	38	2,518	75,253
Pacifica, Half Moon Bay, Coastal Areas	11	7,007	3,998	1,671	1,569	1,891	795	13,900	698	31,529
Woodside, Portola Valley	12	211	421	316	875	5,737	2,986	241	5,513	16,300
Total County		**37,116**	**75,012**	**22,728**	**45,173**	**125,227**	**70,047**	**15,586**	**12,127**	**403,016**
Desired (MTC)										
Daly City, Colma, Brisbane	5	24,157	10,251	1,722	2,896	2,184	756	2,068	211	44,245
South San Francisco, San Bruno	6	7,833	33,754	4,550	7,297	4,201	904	1,174	286	59,999
SFO	7	0	0	0	0	0	0	0	0	0
Millbrae, Burlingame, Hillsborough	8	775	4,209	2,277	23,353	9,069	1,258	105	401	41,447
San Mateo, Foster City, Belmont, San Carlos	9	595	2,751	1,869	10,693	80,941	16,133	110	4,273	117,365
Redwood City, Atherton, Menlo Park, E. Palo Alto	10	207	698	376	1,659	16,064	58,985	49	3,586	81,624
Pacifica, Half Moon Bay, Coastal Areas	11	4,773	4,322	732	1,514	1,728	918	18,278	1,071	33,336
Woodside, Portola Valley	12	155	491	150	905	5,616	3,759	302	8,247	19,625
Total County		**38,495**	**56,476**	**11,676**	**48,317**	**119,803**	**82,713**	**22,086**	**18,075**	**397,641**
Estimated (San Mateo CMA) - Desired (MTC)										
Daly City, Colma, Brisbane		3,572	-2,790	1,387	-517	-257	-222	-829	-90	254
South San Francisco, San Bruno		-7,814	22,763	3,475	-1,317	-2,882	-829	-1,161	-260	11,975
SFO		0	0	0	0	0	0	0	0	0
Millbrae, Burlingame, Hillsborough		231	-724	2,306	-2,075	-760	-284	-34	-148	-1,488
San Mateo, Foster City, Belmont, San Carlos		252	-257	2,314	690	6,704	-2,265	-26	-1,275	6,137
Redwood City, Atherton, Menlo Park, E. Palo Alto		90	-62	465	50	2,335	-8,170	-11	-1,068	-6,371
Pacifica, Half Moon Bay, Coastal Areas		2,234	-324	939	55	163	-123	-4,378	-373	-1,807
Woodside, Portola Valley		56	-70	166	-30	121	-773	-61	-2,734	-3,325
Total County		**-1,379**	**18,536**	**11,052**	**-3,144**	**5,424**	**-12,666**	**-6,500**	**-5,948**	**5,375**

Distribution of San Mateo Home-Based Social/Recreational Trips

From Planning Area:	Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
Estimated (San Mateo CMA)									
Daly City, Colma, Brisbane	8,041	1,805	248	718	766	270	1,310	88	13,246
South San Francisco, San Bruno	5	22,732	1,257	3,471	636	75	43	23	28,242
SFO	0	0	0	0	0	0	0	0	0
Millbrae, Burlingame, Hillsborough	1,038	1,958	791	9,780	5,834	1,153	281	329	21,164
San Mateo, Foster City, Belmont, San Carlos	867	1,341	690	4,656	34,790	8,812	319	1,854	53,329
Redwood City, Atherton, Menlo Park, E. Palo Alto	305	382	162	952	9,073	24,549	152	1,533	37,108
Pacifica, Half Moon Bay, Coastal Areas	1,930	813	110	378	556	278	8,661	489	13,215
Woodside, Portola Valley	203	244	61	529	3,092	2,338	544	3,701	10,712
Total County	**12,389**	**29,275**	**3,319**	**20,484**	**54,747**	**37,475**	**11,310**	**8,017**	**177,016**
Desired (MTC)									
Daly City, Colma, Brisbane	8,206	3,633	349	835	824	275	1,123	99	15,344
South San Francisco, San Bruno	3,359	12,570	1,105	2,466	1,766	450	886	156	22,758
SFO	0	0	0	0	0	0	0	0	0
Millbrae, Burlingame, Hillsborough	742	2,743	866	9,434	5,071	901	183	297	20,237
San Mateo, Foster City, Belmont, San Carlos	725	2,188	844	4,843	33,148	7,726	239	1,953	51,666
Redwood City, Atherton, Menlo Park, E. Palo Alto	265	641	202	987	7,898	23,695	120	1,472	35,280
Pacifica, Half Moon Bay, Coastal Areas	1,792	1,582	152	430	580	276	8,474	531	13,817
Woodside, Portola Valley	167	385	70	495	2,579	2,218	311	3,673	9,898
Total County	**15,256**	**23,742**	**3,588**	**19,490**	**51,866**	**35,541**	**11,336**	**8,181**	**169,000**
									0
									0
Estimated (San Mateo CMA) - Desired (MTC)									
Daly City, Colma, Brisbane	-165	-1,828	-101	-117	-58	-5	187	-11	-2,098
South San Francisco, San Bruno	-3,354	10,162	152	1,005	-1,130	-375	-843	-133	5,484
SFO	0	0	0	0	0	0	0	0	0
Millbrae, Burlingame, Hillsborough	296	-785	-75	346	763	252	98	32	927
San Mateo, Foster City, Belmont, San Carlos	142	-847	-154	-187	1,642	1,086	80	-99	1,663
Redwood City, Atherton, Menlo Park, E. Palo Alto	40	-259	-40	-35	1,175	854	32	61	1,828
Pacifica, Half Moon Bay, Coastal Areas	138	-769	-42	-52	-24	2	187	-42	-602
Woodside, Portola Valley	36	-141	-9	34	513	120	233	28	814
Total County	**-2,867**	**5,533**	**-269**	**994**	**2,881**	**1,934**	**-26**	**-164**	**8,016**

Distribution of San Mateo Non Home-Based Trips

From Planning Area:	Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
Estimated (San Mateo CMA)									
Daly City, Colma, Brisbane	21,247	7,568	1,113	1,545	1,821	652	2,562	233	36,741
South San Francisco, San Bruno	0	40,163	7,333	7,943	6,799	2,001	2,162	616	67,017
SFO	1,705	6,784	3,141	5,031	4,001	426	214	209	21,511
Millbrae, Burlingame, Hillsborough	1,768	6,244	4,210	23,582	12,931	2,454	469	688	52,346
San Mateo, Foster City, Belmont, San Carlos	1,922	4,905	3,059	11,849	90,676	20,512	687	5,354	138,964
Redwood City, Atherton, Menlo Park, E. Palo Alto	645	1,416	716	2,116	19,384	53,069	334	3,402	81,082
Pacifica, Half Moon Bay, Coastal Areas	2,735	1,584	250	416	620	299	12,637	688	19,229
Woodside, Portola Valley	237	465	150	627	5,127	3,438	755	5,429	16,228
Total County	**30,259**	**69,129**	**19,972**	**53,109**	**141,359**	**82,851**	**19,820**	**16,619**	**433,118**
Desired (MTC)									
Daly City, Colma, Brisbane	18,077	7,843	1,236	1,568	1,827	651	2,651	253	34,106
South San Francisco, San Bruno	7,963	34,879	6,820	6,750	5,713	1,671	1,875	561	66,232
SFO	1,508	7,309	3,624	5,304	4,169	968	342	236	23,460
Millbrae, Burlingame, Hillsborough	1,488	6,401	4,622	23,653	12,800	2,417	480	738	52,599
San Mateo, Foster City, Belmont, San Carlos	1,589	4,939	3,300	11,697	88,317	19,774	692	5,643	135,951
Redwood City, Atherton, Menlo Park, E. Palo Alto	538	1,438	779	2,106	19,155	51,863	339	3,647	79,865
Pacifica, Half Moon Bay, Coastal Areas	2,358	1,662	281	427	629	302	13,252	749	19,660
Woodside, Portola Valley	212	507	175	671	5,426	3,593	832	6,204	17,620
Total County	**33,733**	**64,978**	**20,837**	**52,176**	**138,036**	**81,239**	**20,463**	**18,031**	**429,493**
									0
Estimated (San Mateo CMA) - Desired (MTC)									0
Daly City, Colma, Brisbane	3,170	-275	-123	-23	-6	1	-89	-20	2,635
South San Francisco, San Bruno	-7,963	5,284	513	1,193	1,086	330	287	55	785
SFO	197	-525	-483	-273	-168	-542	-128	-27	-1,949
Millbrae, Burlingame, Hillsborough	280	-157	-412	-71	131	37	-11	-50	-253
San Mateo, Foster City, Belmont, San Carlos	333	-34	-241	152	2,359	738	-5	-289	3,013
Redwood City, Atherton, Menlo Park, E. Palo Alto	107	-22	-63	10	229	1,206	-5	-245	1,217
Pacifica, Half Moon Bay, Coastal Areas	377	-78	-31	-11	-9	-3	-615	-61	-431
Woodside, Portola Valley	25	-42	-25	-44	-299	-155	-77	-775	-1,392
Total County	**-3,474**	**4,151**	**-865**	**933**	**3,323**	**1,612**	**-643**	**-1,412**	**3,625**

San Mateo County 1990 Home-Based Work Trips by Mode (Productions)

	Transit Trips					Shared-Ride 3+ Trips				
	TransitTrips			Governing	Threshold	Shared-Ride 3+ Person Trips			Governing	Threshold
County of Attraction	Modeled	Desired	Difference	Threshold:	Exceeded?	Modeled	Desired	Difference	Threshold	Exceeded?
San Francisco	34,860	26,426	8,434	10,000	no	6,002	4,956	1,046	10,000	no
San Mateo County	7,996	8,589	-593	10,000	no	3,029	6,265	-3,236	10,000	no
Santa Clara	1,637	2,673	-1,036	10,000	no	909	1,335	-426	10,000	no
Alameda	1,029	1,348	-319	10,000	no	644	822	-178	10,000	no
Contra Costa	1,117	378	739	10,000	no	537	387	150	10,000	no
Solano	0	0	0	10,000	no	2,150	56	2,094	10,000	no
Napa	0	0	0	10,000	no	160	1	159	10,000	no
Sonoma	0	0	0	10,000	no	61	71	-10	10,000	no
Marin	0	0	0	10,000	no	126	49	77	10,000	no
Total Bay Area	46,639	39,414	18%	10%	yes	13,618	13,942	-2%	10%	no

	Shared-Ride 2 Trips					Drive-Alone Trips						
									Threshold A:	Threshold B:		
	Shared-Ride 2 Person Trips			10,000	Threshold	Drive-Alone Person Trips			10% of	10,000	Governing	Threshold
County of Attraction	Modeled	Desired	Difference	Trips	Exceeded?	Modeled	Desired	Difference	Desired	Trips	Threshold	Exceeded?
San Francisco	20,941	17,719	3,222	10,000	no	82,144	72,245	9,899	7,225	10,000	10,000	no
Santa Clara	22,594	29,146	-6,552	10,000	no	230,240	238,579	-8,339	23,858	10,000	23,858	no
Alameda	2,841	7,148	-4,307	10,000	no	60,196	66,512	-6,317	6,651	10,000	10,000	no
Contra Costa	1,522	1,923	-401	10,000	no	13,619	15,552	-1,933	1,555	10,000	10,000	no
Solano	1,391	135	1,256	10,000	no	2,387	179	2,208	18	10,000	10,000	no
Napa	544	0	544	10,000	no	1,968	89	1,879	9	10,000	10,000	no
Sonoma	141	0	141	10,000	no	748	168	580	17	10,000	10,000	no
Marin	627	925	-298	10,000	no	1,627	1,201	426	120	10,000	10,000	no
Total Bay Area	50,600	56,996	-11%	10%	yes	392,929	394,525	0%	39,453	10,000	39,453	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County 1990; "Desired Drive-Alone Trips", "Desired Transit Trips", and "Desired shared ride trips" all represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "10% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Difference Difference" is greater than the "Governing Threshold"

San Mateo County 1990 Home-Based Work Trips by Mode (Attractions)

	Transit Trips					Shared-Ride 3+ Trips				
	TransitTrips			Governing	Threshold	Shared-Ride 3+ Person Trips			Governing	Threshold
County of Production	Modeled	Desired	Difference	Threshold:	Exceeded?	Modeled	Desired	Difference	Threshold	Exceeded?
San Francisco	5,118	5,510	-392	10,000	no	979	2,111	-1,132	10,000	no
San Mateo County	7,996	8,589	-593	10,000	no	3,029	6,265	-3,236	10,000	no
Santa Clara	3,130	2,272	858	10,000	no	1,541	1,215	326	10,000	no
Alameda	5,384	1,451	3,933	10,000	no	3,771	3,473	298	10,000	no
Contra Costa	41,383	33,167	8,216	10,000	no	1,032	1,029	3	10,000	no
Solano	0	287	-287	10,000	no	2,134	870	1,264	10,000	no
Napa	0	0	0	10,000	no	215	17	198	10,000	no
Sonoma	0	17	-17	10,000	no	326	160	166	10,000	no
Marin	0	163	-163	10,000	no	112	164	-52	10,000	no
Total Bay Area	63,011	51,456	22%	10%	yes	13,139	15,304	-14%	10%	yes

	Shared-Ride 2 Trips					Drive-Alone Trips						
									Threshold A:	Threshold B:		
	Shared-Ride 2 Person Trips			10,000	Threshold	Drive-Alone Person Trips			10% of	10,000	Governing	Threshold
County of Production	Modeled	Desired	Difference	Trips	Exceeded?	Modeled	Desired	Difference	Desired	Trips	Threshold	Exceeded?
San Francisco	3,234	6,732	-3,498	10,000	no	31,378	40,154	-8,776	4,015	10,000	10,000	no
San Mateo	22,594	29,146	-6,552	10,000	no	230,240	238,579	-8,339	23,858	10,000	23,858	no
Santa Clara	6,245	4,804	1,441	10,000	no	35,038	36,670	-1,632	3,667	10,000	10,000	no
Alameda	7,384	6,204	1,180	10,000	no	40,885	35,769	5,116	3,577	10,000	10,000	no
Contra Costa	1,877	1,872	5	10,000	no	14,582	9,219	5,363	922	10,000	10,000	no
Solano	1,909	864	1,045	10,000	no	5,952	2,199	3,753	220	10,000	10,000	no
Napa	1,022	31	991	10,000	no	3,874	206	3,668	21	10,000	10,000	no
Sonoma	815	342	473	10,000	no	3,805	1,393	2,412	139	10,000	10,000	no
Marin	787	707	80	10,000	no	4,499	4,528	-29	453	10,000	10,000	no
Total Bay Area	45,867	50,702	-10%	10%	no	370,253	368,717	0%	36,872	10,000	36,872	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County 1990; "Desired Drive-Alone Trips", "Desired Transit Trips", and "Desired shared ride trips" all represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "10% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Difference Difference" is greater than the "Governing Threshold"

San Mateo County 1990 Home-Based Shop Trips by Mode (Productions)

	Transit Trips					Shared-Ride 3+ Trips				
	Transit Trips			Governing	Threshold	Shared-Ride 3+ Vehicle Trips			Governing	Threshold
County of Attraction	Modeled	Desired	Difference	Threshold:	Exceeded?	Modeled	Desired	Difference	Threshold	Exceeded?
San Francisco	54	3,314	-3,260	10,000	no	2,622	3,174	-552	10,000	no
San Mateo County	7,719	10,425	-2,706	10,000	no	27,864	21,136	6,728	10,000	no
Santa Clara	0	491	-491	10,000	no	2,819	2,211	608	10,000	no
Alameda	0	0	0	10,000	no	358	62	297	10,000	no
Contra Costa	0	0	0	10,000	no	360	5	355	10,000	no
Solano	0	0	0	10,000	no	29	1	28	10,000	no
Napa	0	0	0	10,000	no	5	0	5	10,000	no
Sonoma	0	0	0	10,000	no	20	1	19	10,000	no
Marin	0	0	0	10,000	no	119	15	104	10,000	no
Total Bay Area	7,773	14,230	-6,457	10,000	no	34,196	26,605	7,591	10,000	no

	Shared-Ride 2 Vehicle Trips					Drive-Alone Trips						
									Threshold A:	Threshold B:		
	Shared-Ride 2 Vehicle Trips			10,000	Threshold	Drive-Alone Vehicle Trips			10% of	10,000	Governing	Threshold
County of Attraction	Modeled	Desired	Difference	Trips	Exceeded?	Modeled	Desired	Difference	Desired	Trips	Threshold	Exceeded?
San Francisco	6,331	7,640	-1,309	10,000	no	24,552	25,881	-1,329	2,588	10,000	10,000	no
San Mateo County	49,663	54,158	-4,495	10,000	no	198,850	204,991	-6,141	20,499	10,000	20,499	no
Santa Clara	8,555	6,675	1,880	10,000	no	25,509	27,017	-1,508	2,702	10,000	10,000	no
Alameda	1,088	1,160	-72	10,000	no	3,243	4,485	-1,242	449	10,000	10,000	no
Contra Costa	1,092	218	874	10,000	no	3,257	635	2,622	64	10,000	10,000	no
Solano	87	22	65	10,000	no	1,761	71	1,690	7	10,000	10,000	no
Napa	16	2	14	10,000	no	34	9	25	1	10,000	10,000	no
Sonoma	61	9	52	10,000	no	119	21	98	2	10,000	10,000	no
Marin	361	219	142	10,000	no	660	632	28	63	10,000	10,000	no
Total Bay Area	67,254	70,103	-2,848	10,000	no	257,985	263,742	-5,757	26,374	10,000	26,374	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County 1990; "Desired Drive-Alone Trips", "Desired Transit Trips", and "Desired shared ride trips" all represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "10% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Difference Difference" is greater than the "Governing Threshold"

San Mateo County 2000 Home-Based Shop Trips by Mode (Attractions)

	Transit Trips					Shared-Ride 3+ Trips				
	TransitTrips			Governing	Threshold	Shared-Ride 3+ Vehicle Trips			Governing	Threshold
County of Production	Modeled	Desired	Difference	Threshold:	Exceeded?	Modeled	Desired	Difference	Threshold	Exceeded?
San Francisco	17,182	17,971	-789	10,000	no	1,928	2,242	-314	10,000	no
San Mateo County	140,431	144,722	-4,291	10,000	no	27,864	21,136	6,728	10,000	no
Santa Clara	7,474	8,572	-1,098	10,000	no	1,170	514	656	10,000	no
Alameda	3,836	3,017	819	10,000	no	600	258	342	10,000	no
Contra Costa	1,484	987	497	10,000	no	232	8	224	10,000	no
Solano	0	0	0	10,000	no	23	5	18	10,000	no
Napa	0	0	0	10,000	no	7	1	6	10,000	no
Sonoma	0	0	0	10,000	no	25	0	25	10,000	no
Marin	0	0	0	10,000	no	72	0	72	10,000	no
Total Bay Area	170,407	175,269	-4,862	10,000	no	31,921	24,164	7,757	10,000	no

	Shared-Ride 2 Trips					Drive-Alone Trips						
									Threshold A:	Threshold B:		
	Shared-Ride 2 Vehicle Trips			10,000	Threshold	Drive-Alone Vehicle Trips			10% of	10,000	Governing	Threshold
County of Production	Modeled	Desired	Difference	Trips	Exceeded?	Modeled	Desired	Difference	Desired	Trips	Threshold	Exceeded?
San Francisco	8,381	9,414	-1,033	10,000	no	24,330	25,447	-1,117	2,545	10,000	10,000	no
San Mateo	49,663	54,158	-4,495	10,000	no	198,850	204,926	-6,076	20,493	10,000	20,493	no
Santa Clara	3,549	5,417	-1,868	10,000	no	10,583	12,138	-1,555	1,214	10,000	10,000	no
Alameda	1,822	3,363	-1,541	10,000	no	5,432	4,272	1,160	427	10,000	10,000	no
Contra Costa	705	463	242	10,000	no	2,101	1,398	704	140	10,000	10,000	no
Solano	70	139	-69	10,000	no	208	23	185	2	10,000	10,000	no
Napa	22	42	-20	10,000	no	67	6	61	1	10,000	10,000	no
Sonoma	77	25	52	10,000	no	229	138	91	14	10,000	10,000	no
Marin	220	76	145	10,000	no	656	1,250	-594	125	10,000	10,000	no
Total Bay Area	64,509	73,097	-8,588	10,000	no	242,456	249,598	-7,142	24,960	10,000	24,960	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County 1990; "Desired Drive-Alone Trips", "Desired Transit Trips", and "Desired shared ride trips" all represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "10% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Difference Difference" is greater than the "Governing Threshold"

San Mateo County 1990 Home-Based Social/Recreation Trips by Mode (Productions)

	Transit Trips					Shared-Ride 3+ Trips				
	TransitTrips			Governing	Threshold	Shared-Ride 3+ Vehicle Trips			Governing	Threshold
County of Attraction	Modeled	Desired	Difference	Threshold:	Exceeded?	Modeled	Desired	Difference	Threshold	Exceeded?
San Francisco	0	2,085	-2,085	10,000	no	4,910	3,149	1,761	10,000	no
San Mateo County	4,570	3,522	1,048	10,000	no	18,379	14,741	3,638	10,000	no
Santa Clara	0	248	-248	10,000	no	4,338	1,832	2,506	10,000	no
Alameda	0	2	-2	10,000	no	473	139	334	10,000	no
Contra Costa	0	0	0	10,000	no	158	10	148	10,000	no
Solano	0	0	0	10,000	no	35	2	33	10,000	no
Napa	0	0	0	10,000	no	12	2	10	10,000	no
Sonoma	0	0	0	10,000	no	17	1	16	10,000	no
Marin	0	0	0	10,000	no	43	16	27	10,000	no
Total Bay Area	4,570	5,857	-1,287	10,000	no	28,365	19,891	8,474	10,000	no

	Shared-Ride 2 Vehicle Trips					Drive-Alone Vehicle Trips						
									Threshold A:	Threshold B:		
	Shared-Ride 2 Trips			10,000	Threshold	Drive-Alone Trips			10% of	10,000	Governing	Threshold
County of Attraction	Modeled	Desired	Difference	Trips	Exceeded?	Modeled	Desired	Difference	Desired	Trips	Threshold	Exceeded?
San Francisco	4,914	7,390	-2,477	10,000	no	7,648	11,533	-3,885	1,153	10,000	10,000	no
San Mateo	18,397	20,319	-1,922	10,000	no	71,461	73,266	-1,805	7,327	10,000	10,000	no
Santa Clara	4,343	5,640	-1,297	10,000	no	6,961	9,030	-2,069	903	10,000	10,000	no
Alameda	956	1,962	-1,006	10,000	no	2,243	1,655	588	165	10,000	10,000	no
Contra Costa	318	365	-47	10,000	no	747	261	486	26	10,000	10,000	no
Solano	71	57	15	10,000	no	166	46	120	5	10,000	10,000	no
Napa	25	16	9	10,000	no	59	15	44	2	10,000	10,000	no
Sonoma	34	45	-11	10,000	no	79	27	52	3	10,000	10,000	no
Marin	87	416	-329	10,000	no	204	297	-93	30	10,000	10,000	no
Total Bay Area	29,145	36,210	-7,065	10,000	no	89,570	96,131	-6,561	9,613	10,000	10,000	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County 1990; "Desired Drive-Alone Trips", "Desired Transit Trips", and "Desired shared ride trips" all represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "10% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Difference Difference" is greater than the "Governing Threshold"

San Mateo County 2000 Home-Based Social/Recreation Trips by Mode (Attractions)

	Transit Trips					Shared-Ride 3+ Trips				
	TransitTrips			Governing	Threshold	Shared-Ride 3+ Vehicle Trips			Governing	Threshold
County of Production	Modeled	Desired	Difference	Threshold:	Exceeded?	Modeled	Desired	Difference	Threshold	Exceeded?
San Francisco	0	462	-462	10,000	no	2,558	1,182	1,376	10,000	no
San Mateo County	4,570	3,522	1,048	10,000	no	18,379	14,741	3,638	10,000	no
Santa Clara	0	148	-148	10,000	no	1,323	823	500	10,000	no
Alameda	0	5	-5	10,000	no	666	171	495	10,000	no
Contra Costa	0	0	0	10,000	no	228	51	177	10,000	no
Solano	0	0	0	10,000	no	44	5	39	10,000	no
Napa	0	0	0	10,000	no	15	0	15	10,000	no
Sonoma	0	0	0	10,000	no	74	1	73	10,000	no
Marin	0	0	0	10,000	no	60	3	57	10,000	no
Total Bay Area	4,570	4,137	433	10,000	no	23,347	16,977	6,370	10,000	no

	Shared-Ride 2 Trips					Drive-Alone Trips						
									Threshold A:	Threshold B:		
	Shared-Ride 2 Vehicle Trips			10,000	Threshold	Drive-Alone Vehicle Trips			10% of	10,000	Governing	Threshold
County of Production	Modeled	Desired	Difference	Trips	Exceeded?	Modeled	Desired	Difference	Desired	Trips	Threshold	Exceeded?
San Francisco	2,557	4,522	-1,965	10,000	no	7,719	12,168	-4,449	1,217	10,000	10,000	no
San Mateo	18,397	20,319	-1,922	10,000	no	71,462	73,266	-1,804	7,327	10,000	10,000	no
Santa Clara	2,672	6,072	-3,400	10,000	no	6,269	2,897	3,372	290	10,000	10,000	no
Alameda	1,345	1,824	-479	10,000	no	3,155	2,775	380	278	10,000	10,000	no
Contra Costa	460	690	-230	10,000	no	1,079	190	889	19	10,000	10,000	no
Solano	89	153	-64	10,000	no	209	32	177	3	10,000	10,000	no
Napa	30	42	-12	10,000	no	71	11	60	1	10,000	10,000	no
Sonoma	149	364	-215	10,000	no	348	5	343	1	10,000	10,000	no
Marin	121	350	-229	10,000	no	284	251	33	25	10,000	10,000	no
Total Bay Area	25,820	34,336	-8,516	10,000	no	90,597	91,596	-999	9,160	10,000	10,000	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County 1990; "Desired Drive-Alone Trips", "Desired Transit Trips", and "Desired shared ride trips" all represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "10% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Difference Difference" is greater than the "Governing Threshold"

San Mateo County 2000 Non Home-Based Trips by Mode (Productions)

	Transit Trips					Vehicle Driver (Vehicle) Trips						
	TransitTrips			10,000	Threshold	Threshold A:			10% of	10,000	Governing	Threshold
County of Attraction	Modeled	Desired	Difference	Trips	Exceeded?	Modeled	Desired	Difference	Desired	Trips	Threshold	Exceeded?
San Francisco	7,939	1,315	6,624	10,000	no	61,714	61,997	-283	6,200	10,000	10,000	no
San Mateo	5,379	6,579	-1,200	10,000	no	351,893	350,029	1,864	35,003	10,000	35,003	no
Santa Clara	9,642	400	9,242	10,000	no	53,557	53,325	232	5,333	10,000	10,000	no
Alameda	0	1	-1	10,000	no	14,012	14,916	-904	1,492	10,000	10,000	no
Contra Costa	0	0	0	10,000	no	4,361	3,021	1,340	302	10,000	10,000	no
Solano	0	0	0	10,000	no	1,065	492	573	49	10,000	10,000	no
Napa	0	0	0	10,000	no	336	128	208	13	10,000	10,000	no
Sonoma	0	0	0	10,000	no	975	284	691	28	10,000	10,000	no
Marin	0	0	0	10,000	no	1,450	2,227	-777	223	10,000	10,000	no
Total Bay Area	22,960	8,295	14,665	10,000	yes	489,363	486,420	2,943	48,642	10,000	48,642	no

	Vehicle Passenger (Vehicle) Trips				
				Threshold B:	
				10,000	Threshold
County of Attraction	Modeled	Desired	Difference	Trips	Exceeded?
San Francisco	2,522	5,889	-3,368	10,000	no
San Mateo	39,233	36,622	2,611	10,000	no
Santa Clara	2,092	4,063	-1,971	10,000	no
Alameda	1,455	413	1,042	10,000	no
Contra Costa	453	20	433	10,000	no
Solano	111	0	111	10,000	no
Napa	35	0	35	10,000	no
Sonoma	101	0	101	10,000	no
Marin	151	86	65	10,000	no
Total Bay Area	46,152	47,093	-942	10,000	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County 1990; "Desired Drive-Alone Trips", "Desired Transit Trips", and "Desired shared ride trips" all represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "10% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Difference Difference" is greater than the "Governing Threshold"

San Mateo County 2000 Non Home-Based Trips by Mode (Attractions)

	Transit Trips					Vehicle Driver Trips						
	Transit Trips			Threshold B: 10,000 Trips	Threshold Exceeded?	Vehicle Driver (Vehicle) Trips			Threshold A: 10% of Desired	Threshold B: 10,000 Trips	Governing Threshold	Threshold Exceeded?
County of Production	Modeled	Desired	Difference			Modeled	Desired	Difference				
San Francisco	0	5,116	-5,116	10,000	no	61,213	62,899	-1,687	6,290	10,000	10,000	no
San Mateo	5,379	6,579	-1,200	10,000	no	351,894	350,029	1,865	35,003	10,000	35,003	no
Santa Clara	9,806	358	9,448	10,000	no	48,258	48,256	1	4,826	10,000	10,000	no
Alameda	0	10	-10	10,000	no	11,895	13,425	-1,530	1,343	10,000	10,000	no
Contra Costa	0	0	0	10,000	no	1,853	2,901	-1,047	290	10,000	10,000	no
Solano	0	0	0	10,000	no	341	560	-219	56	10,000	10,000	no
Napa	0	0	0	10,000	no	123	148	-25	15	10,000	10,000	no
Sonoma	0	0	0	10,000	no	362	415	-53	42	10,000	10,000	no
Marin	0	0	0	10,000	no	554	2,476	-1,922	248	10,000	10,000	no
Total Bay Area	15,185	12,063	3,122	10,000	no	476,493	481,110	-4,617	48,111	10,000	48,111	no

	Vehicle Passenger (Vehicle) Trips				
	Vehicle Trips			Threshold B: 10,000 Trips	Threshold Exceeded?
County of Production	Modeled	Desired	Difference		
San Francisco	10,628	8,614	2,014	10,000	no
San Mateo	39,233	36,622	2,611	10,000	no
Santa Clara	2,224	3,732	-1,508	10,000	no
Alameda	1,236	313	923	10,000	no
Contra Costa	192	15	177	10,000	no
Solano	36	0	36	10,000	no
Napa	13	0	13	10,000	no
Sonoma	38	0	38	10,000	no
Marin	58	34	24	10,000	no
Total Bay Area	53,657	49,330	4,327	10,000	no

Notes:

1. "Modeled Trips" represent trips estimated by the CMA Model for San Mateo County 1990; "Desired Drive-Alone Trips", "Desired Transit Trips", and "Desired shared ride trips" all represent the 1990 Census Journey-to-Work commuter matrices
2. The "Governing Threshold" is determined by the greater difference between "10,000 trips" or "10% of the Desired Trips".
3. The threshold is exceeded if the absolute value of the "Difference Difference" is greater than the "Governing Threshold"

Intra-County 1990 San Mateo Home-Based Work Drive-Alone Trips

From Planning Area:	Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
					To Planning Area:				
Daly City, Colma, Brisbane	374	281	85	79	96	38	38	12	1,002
South San Francisco, San Bruno	1,213	3,926	786	903	1,092	427	200	143	8,691
SFO	0	0	0	0	0	0	0	0	0
Millbrae, Burlingame, Hillsborough	1,525	4,801	1,978	6,857	6,333	1,820	261	627	24,202
San Mateo, Foster City, Belmont, San Carlos	2,344	7,297	2,939	7,980	36,908	11,460	544	3,542	73,014
Redwood City, Atherton, Menlo Park, E. Palo Alto	1,067	3,160	1,182	2,597	12,229	28,651	224	3,354	52,464
Pacifica, Half Moon Bay, Coastal Areas	1,859	2,467	545	771	1,292	506	3,134	530	11,104
Woodside, Portola Valley	469	1,330	353	978	3,853	3,299	432	2,151	12,866
Total County	**8,850**	**23,262**	**7,869**	**20,166**	**61,802**	**46,201**	**4,834**	**172,984**	345,967

Intra-County 1990 San Mateo Home-Based Work Shared-Ride 2 Trips

From Planning Area:	Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
					To Planning Area:				
Daly City, Colma, Brisbane	2,025	2,566	1,077	750	805	329	377	106	8,034
South San Francisco, San Bruno	120	4,495	1,737	1,340	1,422	528	189	164	9,995
SFO	0	0	0	0	0	0	0	0	0
Millbrae, Burlingame, Hillsborough	140	453	175	615	589	186	21	55	2,234
San Mateo, Foster City, Belmont, San Carlos	243	775	292	802	3,354	1,112	49	306	6,933
Redwood City, Atherton, Menlo Park, E. Palo Alto	131	400	141	315	1,312	2,745	24	315	5,382
Pacifica, Half Moon Bay, Coastal Areas	559	678	283	253	369	166	650	78	3,036
Woodside, Portola Valley	42	125	32	89	321	262	32	144	1,048
Total County	**3,260**	**9,492**	**3,738**	**4,163**	**8,171**	**5,328**	**1,342**	**35,494**	**33,401**

Intra-County 1990 San Mateo Home-Based Work Shared-Ride 3+ Trips

From Planning Area:	Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
					To Planning Area:				
Daly City, Colma, Brisbane	5,155	4,809	508	1,221	1,539	590	608	232	14,662
South San Francisco, San Bruno	3,449	6,512	488	1,447	1,577	585	397	224	14,679
SFO	0	0	0	0	0	0	0	0	
Millbrae, Burlingame, Hillsborough	19	60	23	80	78	26	3	8	296
San Mateo, Foster City, Belmont, San Carlos	34	107	39	107	439	150	7	41	925
Redwood City, Atherton, Menlo Park, E. Palo Alto	19	57	20	44	177	359	4	43	723
Pacifica, Half Moon Bay, Coastal Areas	616	1,129	137	353	634	240	898	252	4,260
Woodside, Portola Valley	6	18	5	13	44	36	5	20	146
Total County	**9,299**	**12,692**	**1,220**	**3,264**	**4,489**	**1,985**	**1,922**	**820**	**35,691**

Intra-County 1990 San Mateo Home-Based Work Transit Trips

From Planning Area:	Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
					To Planning Area:				
Daly City, Colma, Brisbane	296	413	69	157	326	142	40	25	1,469
South San Francisco, San Bruno	236	244	46	204	345	149	9	24	1,256
SFO	0	0	0	0	0	0	0	0	
Millbrae, Burlingame, Hillsborough	38	166	62	206	268	48	1	7	796
San Mateo, Foster City, Belmont, San Carlos	48	211	104	392	1,384	319	2	46	2,506
Redwood City, Atherton, Menlo Park, E. Palo Alto	17	68	52	115	518	596	1	46	1,413
Pacifica, Half Moon Bay, Coastal Areas	113	106	25	54	96	28	132	21	575
Woodside, Portola Valley	7	10	3	10	67	22	7	13	139
Total County	**756**	**1,218**	**360**	**1,138**	**3,005**	**1,303**	**191**	**183**	**8,154**

Intra-County 1990 San Mateo Home-Based Shop Drive-Alone Trips

From Planning Area:	Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
	To Planning Area:								
Daly City, Colma, Brisbane	91	169	63	44	34	9	3	2	415
South San Francisco, San Bruno	1	3,985	666	769	119	7	1	2	5,550
SFO	0	0	0	0	0	0	0	0	
Millbrae, Burlingame, Hillsborough	374	1,277	1,687	8,122	3,144	368	26	96	15,093
San Mateo, Foster City, Belmont, San Carlos	316	917	1,526	4,161	32,754	5,205	31	1,138	46,047
Redwood City, Atherton, Menlo Park, E. Palo Alto	102	217	283	583	6,343	16,899	13	899	25,340
Pacifica, Half Moon Bay, Coastal Areas	993	699	340	334	489	212	3,698	226	6,991
Woodside, Portola Valley	76	152	115	318	2,093	1,116	83	2,095	6,047
Total County	**1,953**	**7,416**	**4,679**	**14,332**	**44,976**	**23,816**	**3,854**	**4,457**	**105,482**

Intra-County 1990 San Mateo Home-Based Shop Shared-Ride 2 Trips

From Planning Area:	Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
	To Planning Area:								
Daly City, Colma, Brisbane	3,312	890	373	288	236	66	145	15	5,325
South San Francisco, San Bruno	2	7,029	969	743	165	9	2	3	8,922
SFO	0	0	0	0	0	0	0	0	
Millbrae, Burlingame, Hillsborough	126	434	570	2,658	1,018	121	9	32	4,967
San Mateo, Foster City, Belmont, San Carlos	106	309	516	1,388	10,788	1,725	10	375	15,216
Redwood City, Atherton, Menlo Park, E. Palo Alto	37	78	103	210	2,254	6,190	5	313	9,190
Pacifica, Half Moon Bay, Coastal Areas	896	525	220	207	248	105	1,737	89	4,027
Woodside, Portola Valley	26	53	40	110	715	372	29	670	2,015
Total County	**4,507**	**9,317**	**2,789**	**5,603**	**15,425**	**8,588**	**1,937**	**1,496**	**49,663**

Intra-County 1990 San Mateo Home-Based Shop Shared-Ride 3+ Trips

From Planning Area:	Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
					To Planning Area:				
Daly City, Colma, Brisbane	2,419	651	273	212	174	48	112	11	3,900
South San Francisco, San Bruno	2	4,304	608	446	104	6	1	2	5,472
SFO	0	0	0	0	0	0	0	0	
Millbrae, Burlingame, Hillsborough	61	209	273	1,205	449	55	4	15	2,272
San Mateo, Foster City, Belmont, San Carlos	52	152	257	668	5,108	809	5	174	7,225
Redwood City, Atherton, Menlo Park, E. Palo Alto	22	47	62	127	1,295	3,886	3	171	5,613
Pacifica, Half Moon Bay, Coastal Areas	537	313	130	122	146	62	987	52	2,349
Woodside, Portola Valley	14	28	21	58	370	187	15	339	1,032
Total County	**3,106**	**5,704**	**1,626**	**2,838**	**7,646**	**5,053**	**1,127**	**764**	**27,864**

Intra-County 1990 San Mateo Home-Based Shop Transit Trips

From Planning Area:	Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
					To Planning Area:				
Daly City, Colma, Brisbane	946	263	102	56	22	3	23	0	1,415
South San Francisco, San Bruno	0	972	376	135	18	0	0	0	1,502
SFO	0	0	0	0	0	0	0	0	
Millbrae, Burlingame, Hillsborough	9	71	96	230	252	17	0	2	677
San Mateo, Foster City, Belmont, San Carlos	5	37	85	366	1,792	217	0	27	2,530
Redwood City, Atherton, Menlo Park, E. Palo Alto	1	3	14	16	370	895	0	20	1,319
Pacifica, Half Moon Bay, Coastal Areas	50	24	8	5	5	1	93	12	196
Woodside, Portola Valley	1	1	1	2	47	9	7	13	81
Total County	**1,012**	**1,370**	**684**	**810**	**2,504**	**1,141**	**123**	**74**	**7,719**

Intra-County 1990 San Mateo Home-Based Social/Recreation Drive-Alone Trips

From Planning Area:	Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
	To Planning Area:								
Daly City, Colma, Brisbane	2,055	321	41	122	132	47	220	16	2,954
South San Francisco, San Bruno	1	5,730	227	718	123	14	8	5	6,826
SFO	0	0	0	0	0	0	0	0	
Millbrae, Burlingame, Hillsborough	217	424	171	2,748	1,232	235	58	65	5,150
San Mateo, Foster City, Belmont, San Carlos	187	286	146	1,040	9,952	1,966	69	422	14,068
Redwood City, Atherton, Menlo Park, E. Palo Alto	62	75	30	188	1,893	6,474	31	329	9,080
Pacifica, Half Moon Bay, Coastal Areas	392	170	23	79	116	58	3,086	98	4,021
Woodside, Portola Valley	42	50	12	110	651	481	114	1,562	3,022
Total County	**2,954**	**7,057**	**650**	**5,007**	**14,099**	**9,275**	**3,585**	**2,496**	**45,122**

Intra-County 1990 San Mateo Home-Based Social/Recreation Shared-Ride 2 Trips

From Planning Area:	Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
	To Planning Area:								
Daly City, Colma, Brisbane	641	169	22	64	69	24	116	8	1,113
South San Francisco, San Bruno	1	2,144	118	374	64	8	4	2	2,715
SFO	0	0	0	0	0	0	0	0	
Millbrae, Burlingame, Hillsborough	126	236	95	1,073	752	142	34	42	2,500
San Mateo, Foster City, Belmont, San Carlos	103	157	80	567	3,665	1,091	38	237	5,938
Redwood City, Atherton, Menlo Park, E. Palo Alto	35	42	17	105	1,049	2,397	17	190	3,852
Pacifica, Half Moon Bay, Coastal Areas	209	91	12	43	63	32	639	55	1,143
Woodside, Portola Valley	26	31	8	67	390	320	64	235	1,140
Total County	**1,139**	**2,870**	**351**	**2,293**	**6,052**	**4,013**	**912**	**769**	**18,401**

Intra-County 1990 San Mateo Home-Based Social/Recreation Shared/Ride 3+ Trips

From Planning Area:	To Planning Area: Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
Daly City, Colma, Brisbane	942	243	31	93	99	35	185	12	1,641
South San Francisco, San Bruno	1	2,571	143	415	78	9	6	3	3,226
SFO	0	0	0	0	0	0	0	0	
Millbrae, Burlingame, Hillsborough	113	215	87	913	621	124	31	39	2,143
San Mateo, Foster City, Belmont, San Carlos	90	139	71	467	3,153	932	33	195	5,080
Redwood City, Atherton, Menlo Park, E. Palo Alto	35	43	17	107	1,023	2,562	17	170	3,976
Pacifica, Half Moon Bay, Coastal Areas	246	107	14	49	72	36	731	63	1,317
Woodside, Portola Valley	24	28	7	62	356	264	63	214	1,017
Total County	**1,452**	**3,347**	**371**	**2,106**	**5,402**	**3,961**	**1,067**	**696**	**18,400**

Intra-County 1990 San Mateo Home-Based Social/Recreation Transit Trips

From Planning Area:	To Planning Area: Daly City, Colma, Brisbane	South San Francisco, San Bruno	SFO	Millbrae, Burlingame, Hillsborough	San Mateo, Foster City, Belmont, San Carlos	Redwood City, Atherton, Menlo Park, E. Palo Alto	Pacifica, Half Moon Bay, Coastal Areas	Woodside, Portola Valley	Total County
Daly City, Colma, Brisbane	52	43	8	24	58	34	23	11	253
South San Francisco, San Bruno	0	142	13	74	195	100	45	28	598
SFO	67	37	1	31	176	67	23	29	
Millbrae, Burlingame, Hillsborough	33	45	5	61	96	73	14	16	343
San Mateo, Foster City, Belmont, San Carlos	45	78	17	57	211	127	20	38	592
Redwood City, Atherton, Menlo Park, E. Palo Alto	34	66	14	55	130	210	20	63	592
Pacifica, Half Moon Bay, Coastal Areas	17	23	3	7	20	17	18	2	107
Woodside, Portola Valley	8	12	3	7	28	44	2	12	116
Total County	**255**	**447**	**64**	**315**	**913**	**672**	**165**	**200**	**3,031**